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Conference on the Human Environment

A report on Canada's preparations for
and participation in the United Nations
Conference on the Human Environment
Stockholm, Sweden, June 1972.



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Conference
on the Human
Environment

Conférence sur
l'environnement

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Publications



Issued under the authority
of the Honourable Jack Davis, P.C., M.P.,
Minister, Environment Canada

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Jack Davis, c.P., député, Ministre,
Environnement Canada

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Report on United Nations Conference on the Human Environment

June 5-16, 1972

Introduction

In 1968 the United Nations decided that there should be a Conference on the Human Environment in 1972. Sweden put forward the resolution calling for the Conference and offering to act as its host. Canada was a co-sponsor. The Stockholm Conference was thus the culmination of four years of planning by governments. Its objectives were to "*stimulate international awareness and understanding of global, international and common national environmental problems and, based on this understanding, to evolve agreements in substance or in principle to deal with these problems*".

Though the Conference was not designed to solve specific problems, it was a necessary first step towards tackling them. Environmental problems are always complex, and often global or regional in nature, so only international co-operation and commitment can lead to their satisfactory solution.

The tremendous significance of Stockholm can best be appreciated by considering how rapidly action has followed the first awareness of the environmental issue. For many the issue was first perceived with the publication of Rachel Carson's "Silent Spring" in 1962, yet widespread public awareness at the national level was reached in the industrialized countries within half a dozen years. International concern was so evident during Conference preparations that the need to stimulate awareness was really seen as secondary to the importance of achieving greater understanding and working toward effective agreement. Indeed, awareness, concern and recognition of the need for action have grown at a rate that exceeds the rate of the environmental degradation which prompted it all. That an international conference at the government action level could be held only ten years after *Silent Spring* is a success story

that bodes well for solving our unprecedented environmental problems.

This report to the Canadian public on the United Nations Conference on the Human Environment summarizes Canadian preparations and public involvement in Conference preparations, reviews Conference highlights, and considers the implications for Canada of the action taken at Stockholm. An illustrated, 92-page companion publication, *Canada and the Human Environment*, tabled at Stockholm, reports on the status of the environment in Canada in 1972.

The Preparations

Canada's co-sponsorship of the resolution which initiated the Stockholm Conference, and the active participation of Canadians in the many international preparatory working groups, earned her a position of leadership at the Conference.

Our scientific and legal specialists developed many proposals which reflected the programs and policies of Canadian governments that in turn were evolved in response to the Canadian public's increasing concern with environmental problems. These proposals and concepts were fed into the Conference preparations through working meetings and by the contributions of Canadians to the Declaration on the Human Environment, the Conference Secretariat's proposals for the Action Plan, and the draft international conventions for the solution of environmental problems.

At home a Federal Interdepartmental Committee, a Federal-Provincial Preparatory Committee and a National Preparatory Committee provided guidance to the Canadian representatives in the working groups which laid so much of the Conference groundwork. However, it was the public hearings, held in 11 Canadian cities in April 1972, that generated the groundswell of public support which stood the Canadian delegation in such good stead during the important debates at Stockholm. The hearings were widely advertised in daily newspapers, and copies of documents containing recommendations to be considered at the Conference were distributed to interested citizens before the hearings took place.

Some 1200 Canadians registered their attendance at the hearings. They submitted over 400 oral and written briefs expressing views on the Action Plan which the Secretary-General of the Conference had prepared to guide the

governments in developing their positions. The briefs represented the views of individuals, citizen action groups, professional organizations and associations of business and industry.

Detailed analysis of the briefs revealed a public well-informed about many areas of environmental concern — a reflection, no doubt, of the excellent coverage given this topic in the Canadian mass media. Clearly many Canadians are giving serious thought to changes which, though they may have to be drastic in some cases, seem to them inevitable in Canada and the world, if the environment is to be preserved and if the less developed nations of the world are to have real hope for the future. Gross National Product was questioned as a proper measure of the quality of life and the end towards which industrialization is leading was questioned. For example, one observation was that "we see no reason to expect the developing nations to pursue their development in environmentally sound ways . . . so long as rich nations persist in their environmental excesses".

Underlying most briefs was a plea for a more humane approach to both the natural environment and its man-made components. A concern was evident for the plight of the "lonely man" in a world of mass birth, mass education, mass labour, mass production, mass transport, mass housing and mass recreation. Social, cultural, traditional and spiritual values were repeatedly emphasized as warranting more weight on decision-making, with lessened emphasis being placed on purely economic considerations. There was a strong plea for recognition of the values of life-styles that differ from those of the majority. There was strong support for conservation measures at home and abroad. A reverence for all life was expressed by many, and several suggested

that the biblical command to "have dominion over . . ." had been interpreted arrogantly by humans.

The briefs presented at the pre-Conference public hearings across Canada reflected a general awareness of vital issues. Some briefs were critical of the Action Plan for a variety of reasons. Some, mistakenly, believed it to be a Canadian document and considered it poorly oriented to Canadian needs. Others were critical of the United Nations, but most felt that it was the hope for the future. One fifth of the briefs recommended international resource management or the establishment of United Nations-administered controls to protect the world's resources and environment.

Improved conservation education was, by a wide margin, the most frequently occurring recommendation in the briefs. The development of an environmental ethic was spelled out as a new educational goal. The Canadian public sees education and understanding as the key to solving environmental problems. The call for action here has greater implications domestically than internationally.

Strong public concern was expressed about the rapid growth of human populations. The public's briefs reflected an awareness that population, the use of energy and resources, and the technological explosion are closely related and fundamental causes of environmental problems. That Canada is an extravagant consumer of energy and resources was recognized by some briefs, and some recommended limits on economic and technological growth and on energy and resource use.

Very few of the briefs indicated recognition of the "pollution of poverty" which is of such concern to the developing nations.

Both air and water pollution were high on the list of problems cited in the briefs. Surprisingly, noise pollution – which abuses the hearing continuously – was of much less concern.

Several components of the Action Plan gained wide support. These included the monitoring and assessment of environmental pollutants, the drafting and adoption of principles for the control of marine pollution, and establishment of national and international preserves of outstanding ecological interest for research.

There were many commendable suggestions for post-Stockholm institutional arrangements. Given the characteristics of the United Nations system, not all suggestions were considered feasible but they gave support to the Canadian delegation in its work on the establishment of an effective, new United Nations body.

The content of the many excellent briefs received made it clear that the Canadian role at Stockholm must reflect the concern and enthusiasm of the Canadian public. Appendix 5 lists the written submissions received by the Canadian National Preparatory Committee.

The Conference

Sweden and Stockholm provided a beautiful setting and excellent facilities for the Conference, which was attended by over 2,000 delegates and advisers from 113 countries. The Canadian delegation and advisers are listed in Appendix 1. An even greater number of persons attended a variety of associated gatherings, and the press corps was the largest ever to attend a United Nations gathering.

Secretary-General Maurice Strong and his staff arranged for a continuing plenary session from June 5th through June 16th and concurrent sessions of three working committees. The Honourable Jack Davis was elected one of the vice-chairmen of the Conference and was the second speaker at the plenary session. The three committees considered recommendations for inclusion in the Action Plan, subject by subject, often with vigorous debate, and prepared reports on their deliberations for adoption by the plenary session. The plenary devoted the first six days to general statements by heads of national delegations and representatives of intergovernmental and non-governmental organizations. Its final days were occupied by debate on the Declaration on the Human Environment and on the reports of the committees.

Much of the drafting of revisions and the negotiation of wording was done in less formal working groups where Canadians worked hard to obtain agreement. We can justly claim that much of the work which elevated the Declaration and specific recommendations above the level of mediocre generalities was done by our delegates.

Because of the participation of so many members of the United Nations, and the general agreement reached on the Declaration and on the Action Plan, Stockholm was undoubtedly one of the major conferences in the history of the

United Nations. It is felt that the regrettable absence of the U.S.S.R. and several other countries because East Germany was not invited did not seriously affect the Conference, since several of the absentee countries had taken part in the preparations for the Conference and can be expected to maintain their interest when the U.N. General Assembly debates on the Stockholm recommendations in the autumn of 1972.

The varying ideologies and economic circumstances of the members of the United Nations ensured that strongly divergent views were expressed on some of the subjects considered. Although most environmental problems are common to all nations, they were often viewed in a different context and deemed to have varying priorities. For example, Canada, by world standards, is a vast, scarcely populated, affluent country, abundantly rich in resources but with "developing" areas. Japan is a small group of resource-scarce islands in which an affluent society is crowded into huge industrial centres. In Asia, Africa and Latin America many countries suffer from underdevelopment, and abject poverty goes hand in hand with badly abused or unexploited resources. Some are overpopulated, some underpopulated. Is it any wonder that the problems of population and development were not subject to easy agreement?

It is of interest that the Declaration on the Human Environment had been drafted by working groups before the Conference was held, but at the request of the Peoples' Republic of China a new working group was established which drafted a generally better and stronger document. Nations like individuals, insist on being "involved in the development of agreement". The full text of the Declaration is given in Appendix 2 of this report.

However, the whole atmosphere at Stockholm reflected the determination of 113 nations that the Conference should succeed. It is popularly reported that bars and restaurants which had stocked up to entertain delegates were left empty. Delegations worked day and night and seven days a week.

The Action Plan is a complex and comprehensive assemblage of recommendations which are set forth in Appendix 3 of this report. Some of the more important recommendations are highlighted on the following pages.

Highlights and Implications

Even before it came to a close, the Stockholm Conference was being termed a major event in human history. British economist Barbara Ward said, "It is impossible to take part in this conference without wondering whether we may not be present at one of those turning points in man's affairs when the human race begins to see itself and its concerns from a new angle of vision." Canadian Maurice Strong, Secretary-General for the Conference said, "We have taken the first step on a new journey of hope for the future of mankind."

Whether Stockholm will indeed prove to be a milestone in history will depend largely on the extent to which nations, singly and together, follow the guidelines that emerged from the ten-day debate. In honestly facing the many difficult problems that emerged at the Conference, and resisting the temptation to let new accords be dissolved by narrow national interests, the nations showed their concern about environmental problems, and their determination that the Conference should succeed. To maintain the impetus that the Conference created, each nation must now work out its own policies and programs to reflect the Stockholm guidelines.

Since Canadians were seen to play an influential role at Stockholm, the obligation to look at the future in the light of what took place there rests with particular weight on Canada. It is an obligation that all Canadians should assume. Governments at all levels must now define the wide range of new or modified domestic and international initiatives to be taken. But Canadians as individuals and groups must decide for themselves the extent to which they wish to support such initiatives. In summary the United Nations Conference on the Human Environment:

- proclaimed a Declaration on the Human Environment containing principles that will guide international law makers in the years ahead;
- approved 109 recommendations, some with many parts, constituting an Action Plan for tackling the planet's environmental ills, protecting man and his habitat, and thus enhancing human well-being;
- passed a resolution outlining new United Nations machinery, and recommended an environmental fund to encourage international initiatives.

To assess fully the implications of such comprehensive pronouncements will require detailed and intensive analysis over many months, and understanding of the problems and policies of nations acting singly, or in concert through the United Nations. The first test will come during the U.N. General Assembly consideration of the Stockholm recommendations in the autumn of 1972. But even now some conclusions and opinions may be suggested. These, together with reports on the highlights of the Stockholm conclusions are noted below under the headings utilized by the Conference in its deliberations.

Declaration on the Human Environment

Underpinning the entire international environmental initiative was the Declaration on the Human Environment, which was debated throughout the Conference and approved on the final day. None of the principles enunciated in it can be taken lightly. Indeed, if all governments were to adhere to the principles proclaimed, the need for concern about the environment would disappear. Therefore, governments may be

expected to mould their programs and legislation to reflect the intent of the Declaration.

The Declaration on the Human Environment opens with the statement that "Man has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality which permits a life of dignity and well-being . . ."

The Declaration contains two important legal principles upon which new and much-needed international law can be based. Both principles were put forward by Canada. The principles are these:

" . . . states have . . . the sovereign *right* to exploit their own resources . . . and the *responsibility* to ensure that activities within their jurisdiction or control do not cause damage to the environment of other states or of areas beyond the limits of national jurisdiction,"

and

" . . . states shall co-operate to develop further the international law regarding liability and compensation for the victims of pollution and other environmental damage caused by activities within the jurisdiction or control of such states to areas beyond their jurisdiction".

These two principles have long been recognized within Canada, and many of our laws are based on them. Governments must ensure that the quality of waterways reaching the oceans and the quality of the moving air masses are such that no damage is caused to the environment of neighbouring states or to the common resources of the sea and the air.

If states are to develop international law regarding liability and compensation for victims of pollution and other environmental damage, governments will need to examine the adequacy of

domestic law to determine where it should be strengthened to ensure the rights of all to enjoy an adequate environment.

An important principle which Canada wished to see included in the Declaration was drafted as follows: "Relevant information must be supplied by States on activities or developments within their jurisdiction or under their control whenever they believe, or have reason to believe, that such information is needed to avoid the risk of significant adverse effects on the environment in areas beyond their national jurisdiction." Adoption of this principle at Stockholm was blocked by a few nations that placed considerations of national sovereignty above all else. However, the matter was referred to the General Assembly and Canada will again seek to secure its adoption.

The Declaration on the Human Environment provides the nations of the world with a much more solid base on which to build both international and domestic law and environment management programs.

Educational, Social and Cultural Aspects of Environment Issues

The Conference recommended the establishment of an international referral service to link those who wish specific information about the environment with those elsewhere in the world who can provide it. The concept, which was supported by many nations, is an important one but it will require a good deal of careful planning before it can be implemented. Canada has been asked to join a group of experts who will plan and organize the service. Canada is already planning techniques for a comprehensive system of handling its own environmental information.

Also in the field of information the Conference recommended the estab-

lishment of programs using mass media to inform and involve the public in environmental management. It proposed the observance of World Environment Day on June 5th each year. Canadian governments, in consultation with non-governmental organizations, will plan how they may effectively carry out the intent of this recommendation, including the development of programs to make June 5th an effective focus for environmental activities.

In the field of education, the Conference recommended that the United Nations Educational, Scientific and Cultural Organization (UNESCO) establish an international program in environmental education and, in co-operation with other United Nations agencies, promote the training of educational technicians. Canada can expect requests for technical assistance and information.

In the field of conservation the Conference recommended that governments continue preparations for the signing of conventions on the protection of the world's natural and cultural heritage; on the export, import, and transit of endangered species; on the reservation of islands for science; and on the management of migratory species. Canada has an interest in all these conventions and will arrange that qualified delegates join with those of other countries to ensure the early drafting and signing of the conventions. Canada agreed to participate in a program for setting aside areas of broad ecological significance for international research.

A number of nations noted that in their preparations for the Conference and at the Conference itself new dimensions of public participation were greatly in evidence. Commencing with this report the Government of Canada will provide continuing information to Canadians about the results of the Con-

ference and about Canada's activities and policies in the implementation process. Non-governmental organizations will undoubtedly make their own assessment of the implications of the Conference for their future activities and communications programs.

Human Settlements

The Canadian offer to host a Conference/Demonstration on Experimental Human Settlements in 1975 was endorsed enthusiastically. The Conference may well prove to be a forum for discussions of development policy and strategy as well as for the technical aspects of settlement problems. Such a conference, probably attended by representatives of over one hundred countries, would be similar in many respects to the Stockholm Conference but would focus on the problems of accommodating and providing services for the growing world population, in both urban and rural areas. Because many of these problems are more acute in developing countries than they are in developed industrialized countries, the Conference would probably pay special attention to the needs of developing countries. It is proposed that a number of demonstration projects should be designated throughout the world to complement the Human Settlements Conference.

All levels of government in Canada will probably be involved in this Conference. Initial preparations have already begun, under the leadership of the Ministry of State for Urban Affairs, as there is little enough time to prepare for an activity of such major importance. A plan for the conference will be submitted to the new environmental organization of the United Nations next spring.

The Stockholm Conference recommended the creation of a special fund for increased support to developing countries in the improvement of hous-

ing, water supply, sewage disposal, transport and other essential community services. This recommendation focuses on but one dimension of the broad problem of aid to developing countries. At Stockholm, Canada declared its intention to increase its assistance to developing countries who were attacking environmental problems generally, but refrained from offering aid for this specific recommendation pending government consideration.

The Conference recommended that the World Health Organization (WHO) and other United Nations bodies provide increased assistance to governments through family planning programs, and that WHO intensify research in the field of human reproduction so that adverse consequences of the population explosion could be prevented. The Canadian government announced at Stockholm that it considers studies relevant to human population problems to be worthy of serious consideration and recognized the need to develop a rational position on the relationships between world population growth and the capacity of the world's resources and economic systems. Canada declared its intention to participate fully in the United Nations Conference on Human Populations, in 1974, which will focus on this issue.

Development and Environment

The subject of development and environment was of the utmost concern to the developing nations, which feared that the burden of the environmental problems of developed countries would be passed on to them in the form of discriminatory trade barriers and environmental strings attached to development aid projects. These countries, which make up about two-thirds of the world's population, insist that problems of underdevelopment and poverty lie at

the heart of their environmental difficulties and that they can be relieved only by accelerated development. Canada played a significant role in relieving the apprehensions of the developing countries, in this case by presenting a compromise draft on International Trade Relations which was adopted. Our delegation declared that Canada would not abuse environmental measures by using them as discriminatory trade measures and called upon other countries to follow suit.

The importance of the final text of the International Trade Relations recommendation can scarcely be over emphasized, for it not only provided mechanisms for resolving problems of trade impairment, but elicited gratitude to Canada and co-operation during the early days of the Conference from a major bloc which had been sceptical of the motives of the developed powers. The Conference approved other recommendations with the intent of ensuring that environmental concerns do not inhibit development and trade. One method of doing so would be to increase the flow of aid from donor countries to offset increases in costs required to maintain environmental quality. Canada intends to increase development aid and to seek ways in which aid programs might be modified to take account of environmental problems in light of the Stockholm recommendations. It was agreed that the complex questions relating to fluctuating trade flows and the significance of environmental considerations in relation to them should be worked out through the General Agreement on Tariffs and Trade (GATT), and other appropriate international institutions.

Natural Resources Management

Canada played a vigorous role in formulating the Conference recommendation that a global program be initiated to preserve the world's genetic resources through improved conservation measures for natural species and the establishment of banks for plant and animal germ plasm. This would be a comprehensive and many-faceted program, concentrated in areas where a highly diverse flora and fauna are increasingly threatened by man's impact. The program will include surveys of genetic resources, inventories of collections, exploration and collecting, maintenance of seed stocks, and conservation in natural areas. International co-operation and liaison will be essential. Canada offered to contribute both expertise and resources to this program.

One of the more emotional debates at Stockholm centred on whaling. The Conference recommended that governments agree to strengthen the International Whaling Commission and to call for an international agreement for a 10-year moratorium on commercial whaling. The International Whaling Commission, of which Canada is a member, has met since the Conference concluded. Under the pressure of the Stockholm recommendation the Commission has taken action to maintain the moratorium on commercial whaling of stocks designated by qualified scientists as endangered and to establish catch quotas as appropriate for the conservation of stocks which can be harvested safely.

This is in accord with the position that Canada took at Stockholm where she urged that nations recognize the need to harvest renewable resources and that the rational management of all renewable resources should be firmly based on achieving optimum sustained yield.

A further group of Canadian-sponsored recommendations urged international action to benefit fisheries.

The Conference recommended an international study on available energy sources, new technology, and energy consumption trends to provide a basis for eventual development of a world energy policy. Canada joined Argentina in strengthening this recommendation. The Canadian position was that energy resources, and other non-renewable resources, should be managed to provide the best possible net benefit in environmental, social and economic terms. As an energy-rich nation, Canada may expect to be in a crucial position as energy demands rise beyond supplies in less favoured parts of the world. Thus Canada will participate actively in defining the scope and characteristics of the proposed study.

A Canadian proposal to establish a World Registry of Clean Rivers was accepted by the Conference. Implementation of that recommendation will require a definition of the standards to be applied in determining eligibility of rivers for inclusion in the proposed World Registry. As the sponsor of the proposal, Canada expects to take part in defining those standards and planning the administrative procedures required to manage the Registry. Canadians will also wish to ensure that Canadian rivers are conspicuous in the World Registry of Clean Rivers, and accelerated studies and assessment of Canadian river basins is already in hand.

Several recommendations of the Conference stressed the vital importance of studies on the environmental impact of development projects. Canada has made considerable progress in developing techniques for environmental impact studies and administrative mechanisms to ensure that

they are properly scheduled and carried out. Canada is already engaged in efforts to ensure that both levels of government have co-ordinated policies and procedures for environmental impact studies. Canada is also prepared to conduct and make available the results of pilot studies in representative ecosystems to evaluate the environmental impact of resource development.

Pollutants

The Conference recommended a number of steps to gather and assess the information man needs for effective control over pollutants and further recommended that the United Nations work out a procedure for identifying pollutants of international significance and consider appointing expert bodies to assess the exposure risks, pathways, and sources of such pollutants. During preparations for the Conference, and through the ongoing activities of international scientific organizations, Canadian specialists made important contributions but much remains to be done. Canada may be expected to intensify its own research programs and to increase its contributions to international programs.

The atmosphere, oceans, and the living resources they support will be primary areas for increased international research. Canada has stated that it is prepared to strengthen research support for a wide range of activities that would lead to the development of standards and criteria relating to pollution and associated environmental effects. The key task is to clarify the priorities among the many tasks to be undertaken.

The climatic effects of pollutants were dealt with in a recommendation for a network of at least 100 stations to monitor the atmosphere, together with another 10 baseline stations lo-

cated in remote areas to monitor long-term atmospheric trends. Canada has already committed itself to provide seven of the monitoring stations and three of the baseline stations.

The Conference devoted much attention to marine pollution. Governments were asked to act quickly to control all significant sources of marine pollution, in particular the land-based sources which supply most of the pollutants found in the ocean. These include river effluents, coastal sources, and, most important, emissions to the atmosphere that settle in the oceans. Implementation by co-operative action among Canadian governments of the programs enabled by the Clean Air Act, the Canada Water Act and other legislation should ensure that Canada's part in this activity is effective and appropriate. Participation in international monitoring of the quality of the marine environment will ensure that commonly agreed international objectives are met.

The recommendations concerning marine pollution were important to Canada. Our lengthy coastlines and extensive continental shelves make us particularly vulnerable to marine pollution.

Although the Conference adopted 23 Canadian-sponsored principles for the control of marine pollution, it left open the question, raised by three other Canadian proposals, of authority to protect those sections of the seas that lie beyond national jurisdiction. At other international meetings Canada has proposed as an interim measure, pending the establishment of a system of international control, that coastal states be recognized as having special authority to take measures beyond their territorial waters on behalf of the world community to prevent pollution which could cause damage to the marine or land environment within its jurisdiction.

This proposal was "referred" to the 1973 Law of the Sea Conference without recommendation. Canada is maintaining a high level of activity on these matters in the preparations for that Conference and will maintain its involvement in negotiations aimed at developing and proclaiming international law to ensure that the quality of the high seas is protected.

A draft convention to control ocean dumping was proposed during the preparatory stages of the Conference and endorsed by it. A plenipotentiary meeting will be held in the United Kingdom before the end of 1972 to conclude drafting of the convention in readiness for its adoption by the nations of the world. Canada has been active in this field and will continue to strive for the development of an effective convention.

The testing of nuclear weapons was raised as a major issue by New Zealand and Peru, prompted by the imminence of a French test in the South Pacific. Canada supported a recommendation that all nuclear weapons testing should be stopped.

International Machinery

The Conference approved a recommendation to the United Nations General Assembly for the establishment of a Governing Council for Environmental Programs, a small environmental secretariat and a voluntary environment fund. The functions and responsibilities of the proposed bodies and the uses to which the fund might be put remain to be fully defined. Canada will participate in the debate on this subject at the General Assembly.

It is expected that the new environmental secretariat of the United Nations will be relatively small and will direct its attentions to those problems that will yield the greatest results. It is ex-

pected that the new organization will be given the responsibility of initiating programs and co-ordinating international environmental activity through the existing United Nations Agencies and further that it will report to the General Assembly through the Economic and Social Council.

Canada recommended that the Governing Council have authority to review and approve annual budgets for utilization of the Environment Fund. Canada also proposed, with the Netherlands, that the Executive Director of the Council's Secretariat be authorized to provide advisory services on request, and to promote co-operation in environmental problems. This lays the basis for a future role in settling disputes, which may eventually become analogous with the role exercised by the Canada-United States International Joint Commission.

An Environment Fund with a target of \$100 million over five years was proposed, and Canada urged that the Fund be used to support and encourage new environmental initiatives on Council approval. Canada offered up to \$7.5 million for the Fund over five years, and promised an immediate transfer of \$100,000 to help the Conference Secretariat to prepare for the submission of the Stockholm recommendations to the United Nations General Assembly. This cash advance, which was matched by the Ford Foundation, is maintaining the Secretariat pending the formal creation of the new organization by the General Assembly, and means a full year's progress has not been lost.

Canada expects to be represented on the proposed 54-nation Governing Council, and in preparation for meetings of that body Canada is re-examining all the Stockholm Conference international recommendations to determine

the order of priority for their implementation.

This summary report includes only a few important examples of the many issues that were considered at Stockholm. Governments will certainly continue to consider the implications of the Conference and will consult with organizations and individuals that are concerned with the quality of the environment.

What's Next

In Canada some consultations between governments and public will take place as particular issues are tackled; others will occur at the Federal-Provincial Man and Resources Conference scheduled for Montreal in 1973 and at other regional and local conferences that deal with environmental problems.

Internationally, the impact of the Stockholm recommendations has already been felt at the meeting of the International Whaling Commission in London in late June 1972. Stockholm recommendations will be the subject of important discussions at the United Nations General Assembly in the autumn of 1972, at the F.A.O. Fisheries Conference in Vancouver in February 1973, at the United Nations World Population Conference in 1974, and at the United Nations Conference/Demonstration on Experimental Human Settlements in Canada in 1975.

It is not possible to predict what action the United Nations General Assembly may take in continuing the Stockholm process.

The Declaration on the Human Environment stands as *the* Stockholm Declaration. Undoubtedly various opinions of it will be heard at the General Assembly, but that will not alter the fact that the international community has spoken with clarity and strength.

The General Assembly is unlikely to debate the bulk of the recommendations in the Action Plan; it is likely to confine its attention to those few that have been referred to it for action.

If the groundswell from Stockholm continues, the General Assembly will confirm the establishment of the new environmental organization and the environmental fund, leaving the governing body of the new organization to determine priorities and implementation action.

The greatest danger is that the environmental fund will be insufficient for effective action or hedged about with conditions which would limit its usefulness. These are real dangers, but they may well be overcome by the enthusiasm generated at Stockholm.

If its establishment is confirmed, the Governing Council may hold an organizational meeting this winter, and implementation of the Stockholm recommendations at the international level may begin in the early spring. Canada will make a real effort to place specific proposals before the Governing Council at the earliest possible opportunity.

Many believe that the 1972 United Nations Conference on the Human Environment made history. Canada will work hard to confirm that belief.

Appendices

Appendix 1

Canadian Delegates and Advisers

The Canadian delegation was carefully selected to provide the widest possible cross section of Canadian opinion:

Chairman:

The Honourable Jack Davis
Minister of the Environment
Canada

Vice-Chairman:

The Honourable Senator
Alan Macnaughton, P.C.

Delegates:

L'honorable Dr. Victor Goldbloom
Ministre d'État à l'Environnement
Province de Québec

The Honourable William Yurko
Minister of the Environment
Province of Alberta

Mr. Paul Tremblay
Associate Under-Secretary of State
for External Affairs

Mr. Eymard Corbin
Parliamentary Secretary to the
Minister of the Environment

Alternates:

The Honourable Glen Bagnell
Minister of Mines
Province of Nova Scotia

The Honourable N. Byers
Minister of the Environment
Province of Saskatchewan

The Honourable G.W.N. Cockburn
Minister of Fisheries and Environment
Province of New Brunswick

The Honourable William C. Doody
Minister of Mines, Agriculture
and Resources
Province of Newfoundland

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Appendix 2

Declaration of the United Nations Conference on the Human Environment*

The United Nations Conference on the Human Environment,

Having met at Stockholm from 5 to 16 June 1972,

Having Considered the need for a common outlook and for common principles to inspire and guide the peoples of the world in the preservation and enhancement of the human environment,

Proclaims that:

1. Man is both creature and moulder of his environment, which gives him physical sustenance and affords him the opportunity for intellectual, moral, social and spiritual growth. In the long and tortuous evolution of the human race on this planet a stage has been reached when, through the rapid acceleration of science and technology, man has acquired the power to transform his environment in countless ways and on an unprecedented scale. Both aspects of man's environment, the natural and the man-made, are essential to his well-being and to the enjoyment of basic human rights—even the right to life itself.

2. The protection and improvement of the human environment is a major issue which affects the well-being of peoples and economic development throughout the world; it is the urgent desire of the peoples of the whole world and the duty of all Governments.

3. Man has constantly to sum up experience and go on discovering, inventing, creating and advancing. In our time, man's capability to transform his surroundings, if used wisely, can bring to all peoples the benefits of development and the opportunity to enhance the quality of life. Wrongly or heedlessly applied, the same power can do incalculable harm to human beings and the human environment. We see around us growing evidence of man-made harm in many regions of the earth: dangerous levels of pollution in water, air, earth and living beings; major and undesirable disturbances to the ecological balance of the biosphere; destruction and depletion of irreplaceable resources; and gross deficiencies harmful to the physical, mental and social health of man, in

the man-made environment, particularly in the living and working environment.

4. In the developing countries most of the environmental problems are caused by under-development. Millions continue to live far below the minimum levels required for a decent human existence, deprived of adequate food and clothing, shelter and education, health and sanitation. Therefore, the developing countries must direct their efforts to development, bearing in mind their priorities and the need to safeguard and improve the environment. For the same purpose, the industrialized countries should make efforts to reduce the gap between themselves and the developing countries. In the industrialized countries, environmental problems are generally related to industrialization and technological development.

5. The natural growth of population continuously presents problems on the preservation of the environment, and adequate policies and measures should be adopted, as appropriate, to face these problems. Of all things in the world, people are the most precious. It is the people that propel social progress, create social wealth, develop science and technology and, through their hard work, continuously transform the human environment. Along with social progress and the advance of production, science and technology, the capability of man to improve the environment increases with each passing day.

6. A point has been reached in history when we must shape our actions throughout the world with a more prudent care for their environmental consequences. Through ignorance or indifference we can do massive and irreversible harm to the earthly en-

vironment on which our life and well-being depend. Conversely, through fuller knowledge and wiser action, we can achieve for ourselves and our posterity a better life in an environment more in keeping with human needs and hopes. There are broad vistas for the enhancement of environmental quality and the creation of a good life. What is needed is an enthusiastic but calm state of mind and intense but orderly work. For the purpose of attaining freedom in the world of nature, man must use knowledge to build, in collaboration with nature, a better environment. To defend and improve the human environment for present and future generations has become an imperative goal for mankind—a goal to be pursued together with, and in harmony with, the established and fundamental goals of peace and of world-wide economic and social development.

7. To achieve this environmental goal will demand the acceptance of responsibility by citizens and communities and by enterprises and institutions at every level, all sharing equitably in common efforts. Individuals in all walks of life as well as organizations in many fields, by their values and the sum of their actions, will shape the world environment of the future. Local and national governments will bear the greatest burden for large-scale environmental policy and action within their jurisdictions. International co-operation is also needed in order to raise resources to support the developing countries in carrying out their responsibilities in this field. A growing class of environmental problems, because they are regional or global in extent or because they affect the common international realm, will require extensive co-operation among nations and action by international organizations in the

common interest. The Conference calls upon Governments and peoples to exert common efforts for the preservation and improvement of the human environment, for the benefit of all the people and for their posterity.

States the common conviction that:

Principle 1

Man has the fundamental right to freedom, equality and adequate conditions of life, in an environment of a quality that permits a life of dignity and well-being, and he bears a solemn responsibility to protect and improve the environment for present and future generations. In this respect, policies promoting or perpetuating *apartheid*, racial segregation, discrimination, colonial and other forms of oppression and foreign domination stand condemned and must be eliminated.

Principle 2

The natural resources of the earth including the air, water, land, flora and fauna and especially representative samples of natural ecosystems must be safeguarded for the benefit of present and future generations through careful planning or management, as appropriate.

Principle 3

The capacity of the earth to produce vital renewable resources must be maintained and, wherever practicable, restored or improved.

Principle 4

Man has a special responsibility to safeguard and wisely manage the heritage of wildlife and its habitat which are now gravely imperilled by a combination of adverse factors. Nature conservation including wildlife must therefore receive importance in planning for economic development.

Principle 5

The non-renewable resources of the earth must be employed in such a way as to guard against the danger of their future exhaustion and to ensure that benefits from such employment are shared by all mankind.

Principle 6

The discharge of toxic substances or of other substances and the release of heat, in such quantities or concentrations as to exceed the capacity of the environment to render them harmless, must be halted in order to ensure that serious or irreversible damage is not inflicted upon ecosystems. The just struggle of the peoples of all countries against pollution should be supported.

Principle 7

States shall take all possible steps to prevent pollution of the seas by substances that are liable to create hazards to human health, to harm living resources and marine life, to damage amenities or to interfere with other legitimate uses of the sea.

Principle 8

Economic and social development is essential for ensuring a favourable living and working environment for man and for creating conditions on earth that are necessary for the improvement of the quality of life.

Principle 9

Environmental deficiencies generated by the conditions of underdevelopment and natural disasters pose grave problems and can best be remedied by accelerated development through the transfer of substantial quantities of financial and technological assistance as a supplement to the domestic effort of the developing countries and such timely assistance as may be required.

Principle 10

For the developing countries, stability of prices and adequate earnings for primary commodities and raw material are essential to environmental management since economic factors as well as ecological processes must be taken into account.

Principle 11

The environmental policies of all States should enhance and not adversely affect the present or future development potential of developing countries, nor should they hamper the attainment of better living conditions for all, and appropriate steps should be taken by States and international organizations with a view to reaching agreement on meeting the possible national and international economic consequences resulting from the application of environmental measures.

Principle 12

Resources should be made available to preserve and improve the environment, taking into account the circumstances and particular requirements of developing countries and any costs which may emanate from their incorporating environmental safeguards into their development planning and the need for making available to them, upon their request, additional international technical and financial assistance for this purpose.

Principle 13

In order to achieve a more rational management of resources and thus to improve the environment, States should adopt an integrated and co-ordinated approach to their development planning so as to ensure that development is compatible with the need to protect and improve the human environment for the benefit of their population.

Principle 14

Rational planning constitutes an essential tool for reconciling any conflict between the needs of development and the need to protect and improve the environment.

Principle 15

Planning must be applied to human settlements and urbanization with a view to avoiding adverse effects on the environment and obtaining maximum social, economic and environmental benefits for all. In this respect projects which are designed for colonialist and racist domination must be abandoned.

Principle 16

Demographic policies, which are without prejudice to basic human rights and which are deemed appropriate by Governments concerned, should be applied in those regions where the rate of population growth or excessive population concentrations are likely to have adverse effects on the environment or development, or where low population density may prevent improvement of the human environment and impede development.

Principle 17

Appropriate national institutions must be entrusted with the task of planning, managing or controlling the environmental resources of States with the view to enhancing environmental quality.

Principle 18

Science and technology, as part of their contribution to economic and social development, must be applied to the identification, avoidance and control of environmental risks and the solution of environmental problems and for the common good of mankind.

Principle 19

Education in environmental matters, for the younger generation as well as adults, giving due consideration to the underprivileged, is essential in order to broaden the basis for an enlightened opinion and responsible conduct by individuals, enterprises and communities in protecting and improving the environment in its full human dimension. It is also essential that mass media of communications avoid contributing to the deterioration of the environment, but, on the contrary, disseminate information of an educational nature, on the need to protect and improve the environment in order to enable man to develop in every respect.

Principle 20

Scientific research and development in the context of environmental problems, both national and multinational, must be promoted in all countries, especially the developing countries. In this connexion, the free flow of up-to-date scientific information and transfer of experience must be supported and assisted, to facilitate the solution of environmental problems; environmental technologies should be made available to developing countries on terms which would encourage their wide dissemination without constituting an economic burden on the developing countries.

Principle 21

States have, in accordance with the Charter of the United Nations and the principles of international law, the sovereign right to exploit their own resources pursuant to their own environmental policies, and the responsibility to ensure that activities within their jurisdiction or control do not cause damage to the environment of

other States or of areas beyond the limits of national jurisdiction.

Principle 22

States shall co-operate to develop further the international law regarding liability and compensation for the victims of pollution and other environmental damage caused by activities within the jurisdiction or control of such States to areas beyond their jurisdiction.

Principle 23

Without prejudice to such criteria as may be agreed upon by the international community, or to standards which will have to be determined nationally, it will be essential in all cases to consider the systems of values prevailing in each country, and the extent of the applicability of standards which are valid for the most advanced countries but which may be inappropriate and of unwarranted social cost for the developing countries.

Principle 24

International matters concerning the protection and improvement of the environment should be handled in a co-operative spirit by all countries, big or small, on an equal footing. Co-operation through multilateral or bilateral arrangements or other appropriate means is essential to effectively control, prevent, reduce and eliminate adverse environmental effects resulting from activities conducted in all spheres, in such a way that due account is taken of the sovereignty and interests of all States.

Principle 25

States shall ensure that international organizations play a co-ordinated, efficient and dynamic role for the protection and improvement of the environment.

Principle 26

Man and his environment must be spared the effects of nuclear weapons and all other means of mass destruction. States must strive to reach prompt agreement, in the relevant international organs, on the elimination and complete destruction of such weapons.

Appendix 3

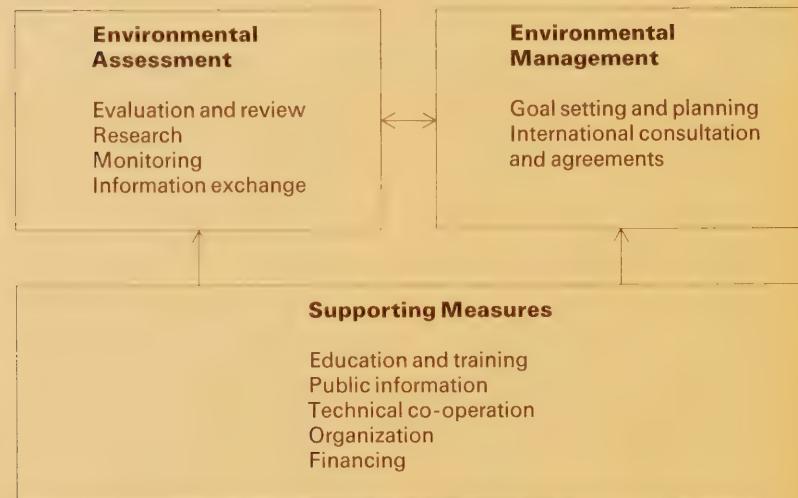
Action Plan for the Human Environment*

A. Framework for environmental action

The recommendations adopted by the Conference have been grouped in an Action Plan that makes it possible to identify international programs and activities across the boundaries of all subject areas. The broad types of action that make up the Plan are:

- (a) The global environmental assessment program (Earthwatch);
- (b) Environmental management activities;
- (c) International measures to support the national and international actions of assessment and management.

The framework of the Action Plan is illustrated in the following diagram.



B. Recommendations for action at the international level

The texts of the recommendations adopted by the United Nations Conference on the Human Environment are given below.

Planning and management of human settlements for environmental quality

Recommendation 1

The planning, improvement and management of rural and urban settlements demand an approach, at all levels, which embraces all aspects of the human environment, both natural and man-made. Accordingly, *it is recommended*:

- (a) That all development assistance agencies, whether international, such as the United Nations Development Program and the International Bank for Reconstruction and Development, regional or national, should in their development assistance activities also give high priority within available resources to requests from Governments for assistance in the planning of human settlements, notably in housing, transportation, water, sewerage and public health, the mobilization of human and financial resources, the improvement of transitional urban settlements and the provision and maintenance of essential community services, in order to achieve as far as possible the social well-being of the receiving country as a whole;
- (b) That these agencies also be prepared to assist the less industrialized countries in solving the environmental problems of development projects; to this end they should actively support the training and encourage the recruitment of requisite personnel, as far as possible within these countries themselves.

Recommendation 2

1. *It is recommended* that Governments should designate to the Secretary-General areas in which they have committed themselves (or are prepared to commit themselves) to a long-term program of improvement and global

promotion of the environment.

(a) In this connexion, countries are invited to share internationally all relevant information on the problems they encounter and the solutions they devise in developing these areas.

(b) Countries concerned will presumably appoint an appropriate body to plan such a program, and to supervise its implementation, for areas which could vary in size from a city block to a national region; presumably, too, the program will be designated to serve, among other purposes, as a vehicle for the preparation and launching of experimental and pilot projects.

(c) Countries which are willing to launch an improvement program should be prepared to welcome international co-operation, seeking the advice or assistance of competent international bodies.

2. It is further recommended:

(a) That in order to ensure the success of the program, Governments should urge the Secretary-General to undertake a process of planning and co-ordination whereby contact would be established with nations likely to participate in the program; international teams of experts might be assembled for that purpose;

(b) That a Conference/Demonstration on Experimental Human Settlements should be held under the auspices of the United Nations in order to provide for co-ordination and the exchange of information and to demonstrate to world public opinion the potential of this approach by means of a display of experimental projects;

(c) That nations should take into consideration Canada's offer to organize such a Conference/Demonstration and to act as host to it.

Recommendation 3

Certain aspects of human settlements can have international implications, for example, the "export" of pollution from urban and industrial areas, and the effects of seaports on international hinterlands. Accordingly, *it is recommended* that the attention of Governments be drawn to the need to consult bilaterally or regionally whenever environmental conditions or development plans in one country could have repercussions in one or more neighbouring countries.

Recommendation 4

1. *It is recommended* that Governments and the Secretary-General, the latter in consultation with the appropriate United Nations agencies, take the following steps:

(a) Entrust the over-all responsibility for an agreed program of environmental research at the international level to any central body that may be given the co-ordinating authority in the field of the environment, taking into account the co-ordination work already being provided on the regional level, especially by the Economic Commission for Europe;

(b) Identify, wherever possible, an existing agency within the United Nations system as the principal focal point for initiating and co-ordinating research in each principal area and, where there are competing claims, establish appropriate priorities;

(c) Designate the following as priority areas for research:

- (i) Theories, policies and methods for the comprehensive environmental development of urban and rural settlements;
- (ii) Methods of assessing quantitative housing needs and of formulating and implementing phased programs designed to satisfy

them (principal bodies responsible: Department of Economic and Social Affairs of the United Nations Secretariat, regional economic commissions and United Nations Economic and Social Office in Beirut);

(iii) Environmental socio-economic indicators of the quality of human settlements, particularly in terms of desirable occupancy standards and residential densities, with a view to identifying their time trends;

(iv) Socio-economic and demographic factors underlying migration and spatial distribution of population, including the problem of transitional settlements (principal bodies responsible: Department of Economic and Social Affairs of the United Nations Secretariat [Centre for Housing, Building and Planning], United Nations Educational, Scientific and Cultural Organization, World Health Organization, International Labour Organization, Food and Agriculture Organization of the United Nations);

(v) Designs, technologies, financial and administrative procedures for the efficient and expanded production of housing and related infra-structure, suitably adapted to local conditions;

(vi) Water supply, sewerage and waste-disposal systems adapted to local conditions, particularly in semi-tropical, tropical, Arctic and sub-Arctic areas (principal body responsible: World Health Organization);

(vii) Alternative methods of meeting rapidly increasing urban transportation needs (principal bodies responsible: Department of Economic and Social Affairs of the

United Nations Secretariat [Resources and Transport Division and Centre for Housing, Building and Planning]);

(viii) Physical, mental and social effects of stresses created by living and working conditions in human conglomerates, for example the accessibility of buildings to persons whose physical mobility is impaired (principal bodies responsible: International Labour Organization, World Health Organization, United Nations Educational, Scientific and Cultural Organization, Department of Economic and Social Affairs of the United Nations Secretariat).

2. *It is further recommended* that Governments consider co-operative arrangements to undertake the necessary research whenever the above-mentioned problem areas have a specific regional impact. In such cases, provision should be made for the exchange of information and research findings with countries of other geographical regions sharing similar problems.

Recommendation 5

It is recommended:

(a) That Governments take steps to arrange for the exchange of visits by those who are conducting research in the public or private institutions of their countries;

(b) That Governments and the Secretary-General ensure the acceleration of the exchange of information concerning past and on-going research, experimentation and project implementation covering all aspects of human settlements, which is conducted by the United Nations system or by public or private entities including academic institutions.

Recommendation 6

It is recommended that Governments and the Secretary-General give urgent attention to the training of those who are needed to promote integrated action on the planning, development and management of human settlements.

Recommendation 7

It is recommended:

- (a) That Governments and the Secretary-General provide equal possibilities for everybody, both by training and by ensuring access to relevant means and information, to influence their own environment by themselves;
- (b) That Governments and the Secretary-General ensure that the institutions concerned shall be strengthened and that special training activities shall be established, making use of existing projects of regional environmental development, for the benefit of the less industrialized countries, covering the following:

- (i) Intermediate and auxiliary personnel for national public services who, in turn, would be in a position to train others for similar tasks (principal bodies responsible: World Health Organization, Department of Economic and Social Affairs of the United Nations Secretariat [Centre for Housing, Building and Planning], United Nations Industrial Development Organization, Food and Agriculture Organization of the United Nations);
- (ii) Specialists in environmental planning and in rural development (principal bodies responsible: Department of Economic and Social Affairs of the United Nations Secretariat [Centre for Housing, Building and Planning], Food and Agriculture Organization of the United Nations);

- (iii) Community developers for self-help programs for low-income groups (principal body responsible: Department of Economic and Social Affairs of the United Nations Secretariat [Centre for Housing, Building and Planning]);
- (iv) Specialists in working environments (principal bodies responsible: International Labour Organization, Department of Economic and Social Affairs of the United Nations Secretariat [Centre for Housing, Building and Planning], World Health Organization);
- (v) Planners and organizers of mass transport systems and services, with special reference to environmental development (principal body responsible: Department of Economic and Social Affairs of the United Nations Secretariat [Resources and Transport Division]).

Recommendation 8

It is recommended that regional institutions take stock of the requirements of their regions for various environmental skills and of the facilities available to meet those requirements in order to facilitate the provision of appropriate training within regions.

Recommendation 9

It is recommended that the World Health Organization increase its efforts to support Governments in planning for improving water supply and sewerage services through its community water supply program, taking account, as far as possible, of the framework of total environment programs for communities.

Recommendation 10

It is recommended that development assistance agencies should give higher priority, where justified in the light of the social benefits, to supporting Gov-

ernments in financing and setting up services for water supply, disposal of water from all sources, and liquid-waste and solid-waste disposal and treatment as part of the objectives of the Second United Nations Development Decade.

Recommendation 11

It is recommended that the Secretary-General ensure that during the preparations for the 1974 World Population Conference, special attention shall be given to population concerns as they relate to the environment and, more particularly, to the environment of human settlements.

Recommendation 12

1. It is recommended that the World Health Organization and other United Nations agencies should provide increased assistance to Governments which so request in the field of family planning programs without delay.

2. It is further recommended that the World Health Organization should promote and intensify research endeavour in the field of human reproduction, so that the serious consequences of population explosion on human environment can be prevented.

Recommendation 13

It is recommended that the United Nations agencies should focus special attention on the provision of assistance for combating the menace of human malnutrition rampant in many parts of the world. Such assistance will cover training, research and development endeavours on such matters as causes of malnutrition, mass production of high-protein and multipurpose foods, qualitative and quantitative characteristics of routine foods, and the launching of applied nutrition programs.

Recommendation 14

It is recommended that the intergovernmental body for environmental affairs to be established within the United Nations should ensure that the required surveys shall be made concerning the need and the technical possibilities for developing internationally agreed standards and measuring and limiting noise emissions and that, if it is deemed advisable, such standards shall be applied in the production of means of transportation and certain kinds of working equipment, without a large price increase or reduction in the aid given to developing countries.

Recommendation 15

It is recommended that the Secretary-General, in consultation with the appropriate United Nations bodies, formulate programs on a world-wide basis to assist countries to meet effectively the requirements of growth of human settlements and to improve the quality of life in existing settlements; in particular, in squatter areas.

Recommendation 16

The programs referred to in recommendation 15 should include the establishment of subregional centres to undertake, *inter alia*, the following functions:

- (a) Training;
- (b) Research;
- (c) Exchange of information;
- (d) Financial, technical and material assistance.

Recommendation 17

It is recommended that Governments and the Secretary-General take immediate steps towards the establishment of an international fund or a financial institution whose primary operative objectives will be to assist in strengthening national programs relating to human settlements through the pro-

vision of seed capital and the extension of the necessary technical assistance to permit an effective mobilization of domestic resources for housing and the environmental improvement of human settlements.

Recommendation 18

It is recommended that the following recommendations be referred to the Disaster Relief Co-ordinator for his consideration, more particularly in the context of the preparation of a report to the Economic and Social Council:

1. *It is recommended* that the Secretary-General, with the assistance of the Disaster Relief Co-ordinator and in consultation with the appropriate bodies of the United Nations system and non-governmental bodies:

- (a) Assess the over-all requirements for the timely and widespread distribution of warnings which the observational and communications networks must satisfy;

- (b) Assess the needs for additional observational networks and other observational systems for natural disaster detection and warnings for tropical cyclones (typhoons, hurricanes, cyclones etc.) and their associated storm surges, torrential rains, floods, tsunamis, earthquakes etc.;

- (c) Evaluate the existing systems for the international communication of disaster warnings, in order to determine the extent to which these require improvement;

- (d) On the basis of these assessments, promote, through existing national and international organizations, the establishment of an effective world-wide natural disaster warning system, with special emphasis on tropical cyclones and earthquakes, taking full advantage of existing systems and plans, such as the World Weather Watch, the World

Meteorological Organization's Tropical Cyclone Project, the International Tsunami Warning System, the World-Wide Standardized Seismic Network and the Desert Locust Control Organization;

(e) Invite the World Meteorological Organization to promote research on the periodicity and intensity of the occurrence of droughts, with a view to developing improved forecasting techniques.

2. *It is further recommended* that the United Nations Development Program and other appropriate international assistance agencies give priority in responding to requests from Governments for the establishment and improvement of natural disaster research programs and warning systems.

3. *It is recommended* that the Secretary-General ensure that the United Nations system shall provide to Governments a comprehensive program of advice and support in disaster prevention. More specifically, the question of disaster prevention should be seen as an integral part of the country program as submitted to, and reviewed by, the United Nations Development Program.

4. *It is recommended* that the Secretary-General take the necessary steps to ensure that the United Nations system shall assist countries with their planning for pre-disaster preparedness. To this end:

- (a) An international program of technical co-operation should be developed, designed to strengthen the capabilities of Governments in the field of pre-disaster planning, drawing upon the services of the resident representatives of the United Nations Development Program;

- (b) The Office of Disaster Relief, with the assistance of relevant agencies of the United Nations, should organize plans and programs for international co-operation in cases of natural disasters;
- (c) As appropriate, non-governmental international agencies and individual Governments should be invited to participate in the preparation of such plans and programs.

Environmental Aspects of Natural Resources Management

Recommendation 19

It is recommended that the Food and Agriculture Organization of the United Nations, in co-operation with other relevant international organizations, should include in its program questions relating to rural planning in relation to environmental policy, since environmental policy is formulated in close association with physical planning and with medium-term and long-term economic and social planning. Even in highly industrialized countries, rural areas still cover more than 90 per cent of the territory and consequently should not be regarded as a residual sector and a mere reserve of land and manpower. The program should therefore include, in particular:

- (a) Arrangements for exchanges of such data as are available;
- (b) Assistance in training and informing specialists and the public, especially young people, from primary school age onwards;
- (c) The formulation of principles for the development of rural areas, which should be understood to comprise not only agricultural areas as such but also small- and medium-sized settlements and their hinterland.

Recommendation 20

It is recommended that the Food and Agriculture Organization of the United Nations, in co-operation with other international agencies concerned, strengthen the necessary machinery for the international acquisition of knowledge and transfer of experience on soil capabilities, degradation, conservation and restoration, and to this end:

- (a) Co-operative information exchange should be facilitated among those na-

tions sharing similar soils, climate and agricultural conditions;

- (i) The Soil Map of the World being prepared by the Food and Agriculture Organization of the United Nations, the United Nations Educational, Scientific and Cultural Organization and the International Society of Soil Science should serve to indicate those areas among which transfer of knowledge on soil potentialities and soil degradation and restoration would be most valuable;
- (ii) This map should be supplemented through the establishment of international criteria and methods for the assessment of soil capabilities and degradations and the collection of additional data based upon these methods and criteria. This should permit the preparation of a World Map of Soil Degradation Hazards as a framework for information exchange in this area;
- (iii) Information exchange on soil use should account for similarities in vegetation and other environmental conditions as well as those of soil, climate, and agricultural practices;
- (iv) The FAO Soil Data-Processing System should be developed beyond soil productivity considerations, to include the above-mentioned data and relevant environmental parameters, and to facilitate information exchange between national soil institutions, and eventually soil-monitoring stations;
- (b) International co-operative research on soil capabilities and conservation should be strengthened and broadened to include:
 - (i) Basic research on soil degradation processes in selected ecosystems under the auspices of the Man and the Biosphere Program.

This research should be directed as a matter of priority to those arid areas that are most threatened;

(ii) Applied research on soil and water conservation practices under specific land-use conditions with the assistance of the Food and Agriculture Organization of the United Nations and, where appropriate, other agencies (United Nations Educational, Scientific and Cultural Organization, World Health Organization and International Atomic Energy Agency);

(iii) Strengthening of existing research centres and, where necessary, establishment of new centres with the object of increasing the production from dry farming areas without any undue impairment of the environment;

(iv) Research on the use of suitable soils for waste disposal and recycling; the United Nations Industrial Development Organization, the Food and Agriculture Organization of the United Nations, and the World Health Organization should enter into joint consultations regarding the feasibility of an international program in this area:

(c) These efforts for international co-operation in research and information exchange on soils should be closely associated with those of the UNDP/WMO/FAO/UNESCO program of agricultural biometeorology, in order to facilitate integration of data and practical findings and to support the national programs of conservation of soil resources recommended above;

(d) It should moreover be noted that in addition to the various physical and climatic phenomena which contribute to soil degradation, economic and social factors contribute to it as well; among the economic contributory factors, one which should be particularly

emphasized is the payment of inadequate prices for the agricultural produce of developing countries, which prevents farmers in those countries from setting aside sufficient savings for necessary investments in soil regeneration and conservation. Consequently, urgent remedial action should be taken by the organizations concerned to give new value and stability to the prices of raw materials of the developing countries.

Recommendation 21

It is recommended that Governments, the Food and Agriculture Organization of the United Nations and the World Health Organization, in co-operation with the United Nations Educational, Scientific and Cultural Organization and the International Atomic Energy Agency, strengthen and co-ordinate international programs for integrated pest control and reduction of the harmful effects of agro-chemicals:

(a) Existing international activities for the exchange of information and co-operative research and technical assistance to developing countries should be strengthened to support the national programs described above, with particular reference to:

- (i) Basic research on ecological effects of pesticides and fertilizers (MAB);
- (ii) Use of radio-isotope and radiation techniques in studying the fate of pesticides in the environment (joint IAEA/FAO Division);
- (iii) Evaluation of the possibility of using pesticides of biological origin in substitution for certain chemical insecticides which cause serious disturbances in the environment;
- (iv) Dose and timing of fertilizers' application and their effects on soil productivity and the environment (Food and Agriculture Organization of the United Nations);

(v) Management practices and techniques for integrated pest control, including biological control (Food and Agriculture Organization of the United Nations and World Health Organization);

(vi) Establishment and/or strengthening of national and regional centres for integrated pest control, particularly in developing countries (Food and Agriculture Organization of the United Nations and World Health Organization);

(b) Existing expert committees of the Food and Agriculture Organization of the United Nations and the World Health Organization on various aspects of pest control should be convened periodically:

- (i) To assess recent advances in the relevant fields of research mentioned above;
- (ii) To review and further develop international guidelines and standards with special reference to national and ecological conditions in relation to the use of chlorinated hydrocarbons, pesticides containing heavy metals and the use and experimentation of biological controls;

(c) In addition, *ad hoc* panels of experts should be convened, by the Food and Agriculture Organization of the United Nations, the World Health Organization and, where appropriate, the International Atomic Energy Agency, in order to study specific problems, and facilitate the work of the above-mentioned committees.

Recommendation 22

It is recommended that the Food and Agriculture Organization of the United Nations, under its "War on Waste" program, place increased emphasis on control and recycling of wastes in agriculture:

(a) This program should assist the national activities relating to:

- (i) Control and recycling of crop residues and animal wastes;
- (ii) Control and recycling of agro-industrial waste;
- (iii) Use of municipal wastes as fertilizers;

(b) The program should also include measures to avoid wasteful use of natural resources through the destruction of unmarketable agricultural products or their use for improper purposes.

Recommendation 23

It is recommended that Governments, in co-operation with the Food and Agriculture Organization of the United Nations and other agencies and bodies, establish and strengthen regional and international machinery for the rapid development and management of domesticated livestock of economic importance and their related environmental aspects as part of the ecosystems, particularly in areas of low annual productivity, and thus encourage the establishment of regional livestock research facilities, councils and commissions, as appropriate.

Recommendation 24

It is recommended that the Secretary-General take steps to ensure that the United Nations bodies concerned co-operate to meet the needs for new knowledge on the environmental aspects of forests and forest management:

(a) Where appropriate, research should be promoted, assisted, co-ordinated, or undertaken by the Man and the Biosphere Program (UNESCO), in close co-operation with the Food and Agriculture Organization of the United Nations and the World Meteorological Organization, and with the collaboration of the International Council of Scientific Unions and the International

Union of Forestry Research Organizations;

(b) Research on comparative legislation, land tenure, institutions, tropical forest management, the effects of the international trade in forest products on national forest environments, and public administration, should be sponsored or co-ordinated by FAO, in co-operation with other appropriate international and regional organizations;

(c) The Food and Agriculture Organization of the United Nations, in conjunction with the United Nations Educational, Scientific and Cultural Organization and other appropriate international organizations, should give positive advice to member countries on the important role of forests with reference to, and in conjunction with, the conservation of soil, watersheds, the protection of tourist sites and wildlife, and recreation, within the over-all framework of the interests of the biosphere.

Recommendation 25

It is recommended that the Secretary-General take steps to ensure that continuing surveillance, with the co-operation of Member States, of the world's forest cover shall be provided for through the programs of the Food and Agriculture Organization of the United Nations and the United Nations Educational, Scientific and Cultural Organization.

(a) Such a World Forest Appraisal Program would provide basic data, including data on the balance between the world's forest biomass and the prevailing environment, and changes in the forest biomass, considered to have a significant impact on the environment;

(b) The information could be collected from existing inventories and on-going activities and through remote-sensing techniques;

(c) The forest protection program described above might be incorporated within this effort, through the use of advanced technology, such as satellites which use different types of imagery and which could constantly survey all forests.

Recommendation 26

It is recommended that the Food and Agriculture Organization of the United Nations co-ordinate an international program for research and exchange of information on forest fires, pests and diseases:

(a) The program should include data collection and dissemination, identification of potentially susceptible areas and of means of suppression; exchange of information on technologies, equipment and techniques; research, including integrated pest control and the influence of fires on forest ecosystems, to be undertaken by the International Union of Forestry Research Organizations; establishment of a forecasting system in co-operation with the World Meteorological Organization; organization of seminars and study tours; the facilitation of bilateral agreements for forest protection between neighbouring countries, and the development of effective international quarantines;

(b) Forest fires, pests and diseases will frequently each require separate individual treatment.

Recommendation 27

It is recommended that the Food and Agriculture Organization of the United Nations facilitate the transfer of information on forests and forest management:

(a) The amount of knowledge that can usefully be exchanged is limited by the differences of climatic zones and forest types;

(b) The exchange of information should however be encouraged among nations sharing similarities; considerable knowledge is already exchanged among the industrialized nations of the temperate zone;

(c) Opportunities exist, despite differences, for the useful transfer of information to developing countries on the environmental aspects of such items as:

- (i) the harvesting and industrialization of some tropical hardwoods;
- (ii) pine cultures;
- (iii) the principles of forest management systems and management science;
- (iv) soils and soil interpretations relating to forest management;
- (v) water regimes and water-shed management;
- (vi) forest industries pollution controls, including both technical and economic data;
- (vii) methods for the evaluation of forest resources through sampling techniques, remote sensing, and data-processing;
- (viii) control of destructive fires and pest outbreaks; and
- (ix) co-ordination in the area of the definition and standardization of criteria and methods for the economic appraisal of forest environmental influences and for the comparison of alternative uses.

Recommendation 28

It is recommended that the Food and Agriculture Organization of the United Nations strengthen its efforts in support of forestry projects and research projects, possibly for production, in finding species which are adaptable even in areas where this is exceptionally difficult because of ecological conditions.

Recommendation 29

It is recommended that the Secretary-General ensure that the effect of pollutants upon wildlife shall be considered, where appropriate, within environmental monitoring systems. Particular attention should be paid to those species of wildlife that may serve as indicators for future wide environmental disturbances, and an ultimate impact upon human populations.

Recommendation 30

It is recommended that the Secretary-General ensure the establishment of a program to expand present data gathering processes so as to assess the total economic value of wildlife resources.

- (a) Such data would facilitate the task of monitoring the current situation of animals endangered by their trade value, and demonstrate to questioning nations the value of their resources;
- (b) Such a program should elaborate upon current efforts of the Food and Agriculture Organization of the United Nations and might well produce a year-book of wildlife* statistics.

Recommendation 31

It is recommended that the Secretary-General ensure that the appropriate United Nations agencies co-operate with the Governments of the developing countries to develop special short-term training courses on wildlife management:*

- (a) Priority should be given to conversion courses for personnel trained in related disciplines such as forestry or animal husbandry;
- (b) Special attention should be given to the establishment and support of regional training schools for technicians.

Recommendation 32

It is recommended that Governments give attention to the need to enact international conventions and treaties to protect species inhabiting international waters or those which migrate from one country to another:

- (a) A broadly-based convention should be considered which would provide a framework by which criteria for game regulations could be agreed upon and the over-exploitation of resources curtailed by signatory countries;
- (b) A working group should be set up as soon as possible by the appropriate authorities to consider these problems and to advise on the need for, and possible scope of, such conventions or treaties.

Recommendation 33

It is recommended that Governments agree to strengthen the international whaling commission, to increase international research efforts, and as a matter of urgency to call for an international agreement, under the auspices of the international whaling commission and involving all Governments concerned, for a 10-year moratorium on commercial whaling.

Recommendation 34

It is recommended that Governments and the Secretary-General give special attention to training requirements on the management of parks and protected areas:

- (a) High-level training should be provided and supported:
 - (i) In addition to integrating aspects of national parks planning and management into courses on forestry and other subjects, special degrees should be offered in park management; the traditional forestry, soil and geology background of the park manager must be broad-

*Whereas elsewhere in this report the expression "wildlife" is meant to include both animals and plants, it should be understood here to be restricted to the most important animals.

ened into an integrated approach; (ii) Graduate courses in natural resources administration should be made available in at least one major university in every continent; (b) Schools offering courses in national park management at a medium-grade level should be assisted by the establishment or expansion of facilities, particularly in Latin America and Asia.

Recommendation 35

It is recommended that the Secretary-General take steps to ensure that an appropriate mechanism shall exist for the exchange of information on national parks legislation and planning and management techniques developed in some countries which could serve as guidelines to be made available to any interested country.

Recommendation 36

It is recommended that the Secretary-General take steps to ensure that the appropriate United Nations agencies shall assist the developing countries to plan for the inflow of visitors into their protected areas in such a way as to reconcile revenue and environmental considerations within the context of the recommendations approved by the Conference. The other international organizations concerned may likewise make their contribution.

Recommendation 37

It is recommended that Governments take steps to co-ordinate, and co-operate in the management of, neighbouring or contiguous protected areas. Agreement should be reached on such aspects as mutual legislation, patrolling systems, exchange of information, research projects, collaboration on measures of burning, plant and animal control, fishery regulations, censuses, tourist circuits and frontier formalities.

Recommendation 38

It is recommended that Governments take steps to set aside areas representing ecosystems of international significance for protection under international agreement.

Recommendation 39

It is recommended that Governments, in co-operation with the Secretary-General of the United Nations and the Food and Agriculture Organization of the United Nations where indicated, agree to an international program to preserve the world's genetic resources: (a) Active participation at the national and international levels is involved. It must be recognized, however, that while survey, collection, and dissemination of these genetic resources are best carried out on a regional or international basis, their actual evaluation and utilization are matters for specific institutions and individual workers; international participation in the latter should concern exchange of techniques and findings; (b) An international network is required with appropriate machinery to facilitate the interchange of information and genetic material among countries; (c) Both static (seed banks, culture collection etc.) and dynamic (conservation of populations in evolving natural environments) ways are needed. (d) Action is necessary in six interrelated areas:

- (i) Survey of genetic resources;
- (ii) Inventory of collections;
- (iii) Exploration and collecting;
- (iv) Documentation;
- (v) Evaluation and utilization;
- (vi) Conservation, which represents the crucial element to which all other programs relate;
- (e) Although the international program relates to all types of genetic resources, the action required for each

resource will vary according to existing needs and activities.

Recommendation 40

It is recommended that Governments, in co-operation with the Secretary-General of the United Nations and the Food and Agriculture Organization of the United Nations where indicated, make inventories of the genetic resources most endangered by depletion or extinction:

- (a) All species threatened by man's development should be included in such inventories;
- (b) Special attention should be given to locating in this field those areas of natural genetic diversity that are disappearing;
- (c) These inventories should be reviewed periodically and brought up to date by appropriate monitoring;
- (d) The survey conducted by FAO in collaboration with the International Biological Program is designed to provide information on endangered crop genetic resources by 1972, but will require extension and follow-up.

Recommendation 41

It is recommended that Governments, in co-operation with the Secretary-General of the United Nations and the Food and Agriculture Organization of the United Nations where indicated, compile or extend, as necessary, registers of existing collections of genetic resources:

- (a) Such registers should identify which breeding and experiment stations, research institutions and universities maintain which collections;
- (b) Major gaps in existing collections should be identified where material is in danger of being lost;
- (c) These inventories of collections should be transformed for computer

handling and made available to all potential users;

(d) In respect of plants:

- (i) It would be expected that the "advanced varieties" would be well represented, but that primitive materials would be found to be scarce and require subsequent action;
- (ii) The action already initiated by FAO, several national institutions, and international foundations should be supported and expanded.

(e) In respect of micro-organisms, it is recommended that each nation develop comprehensive inventories of culture collections:

- (i) A cataloguing of the large and small collections and the value of their holdings is required, rather than a listing of individual strains;
- (ii) Many very small but unique collections, sometimes the works of a single specialist, are lost;
- (iii) Governments should make sure that valuable gene pools held by individuals or small institutes are also held in national or regional collections.

(f) In respect of animal germ plasm, it is recommended that FAO establish a continuing mechanism to assess and maintain catalogues of the characteristics of domestic animal breeds, types and varieties in all nations of the world. Likewise, FAO should establish such lists where required.

(g) In respect of aquatic organisms, it is recommended that FAO compile a catalogue of genetic resources of cultivated species and promote intensive studies on the methods of preservation and storage of genetic material.

Recommendation 42

It is recommended that Governments, in co-operation with the Secretary-General of the United Nations and the Food and Agriculture Organization of

the United Nations where indicated, initiate immediately, in co-operation with all interested parties, programs of exploration and collection wherever endangered species have been identified which are not included in existing collections:

- (a) An emergency program, with the co-operation of the Man and the Biosphere Program, of plant exploration and collection should be launched on the basis of the FAO List of Emergency Situations for a five-year period;
- (b) With regard to forestry species, in addition to the efforts of the Danish/FAO Forest Tree Seed Centre, the International Union of Forestry Research Organizations, and the FAO Panel of Experts on Forest Gene Resources, support is needed for missions planned for Latin America, West Africa, the East Indies and India.

Recommendation 43

It is recommended that Governments, in co-operation with the Secretary-General of the United Nations and the Food and Agriculture Organization of the United Nations where indicated:

1. Recognize that conservation is a most crucial part of any genetic resources program. Moreover, major types of genetic resources must be treated separately because:

- (a) They are each subject to different programs and priorities;
- (b) They serve different uses and purposes;
- (c) They require different expertise, techniques and facilities;

2. In respect of plant germ plasms (agriculture and forestry), organize and equip national or regional genetic resources conservation centres:

- (a) Such centres as the National Seed Storage Laboratory in the United States

of America and the Vavilov Institute of Plant Industry in the Union of Soviet Socialist Republics already provide good examples;

(b) Working collections should be established separately from the basic collections; these will usually be located at plant and breeding stations and will be widely distributed;

(c) Three classes of genetic crop resources must be conserved:

(i) High-producing varieties in current use and those they have superseded;

(ii) Primitive varieties of traditional pre-scientific agriculture (recognized as genetic treasures for plant improvement);

(iii) Mutations induced by radiation or chemical means;

(d) Species contributing to environmental improvement, such as sedge used to stabilize sand-dunes, should be conserved;

(e) Wild or weed relatives of crop species and those wild species of actual or potential use in rangelands, industry, new crops etc. should be included;

3. In respect of plant germ plasms (agriculture and forestry), maintain gene pools of wild plant species within their natural communities. Therefore:

(a) It is essential that primeval forests, bushlands and grasslands which contain important forest genetic resources be identified and protected by appropriate technical and legal means; systems of reserves exist in most countries but a strengthening of international understanding on methods of protection and on availability of material may be desired;

(b) Conservation of species of medical, aesthetic or research value should be assured;

(c) The network of biological reserves proposed by UNESCO (Man and the

Biosphere Program) should be designed, where feasible, to protect these natural communities;

(d) Where protection in nature becomes uncertain or impossible, then means such as seed storage or living collections in provenance trials or botanic gardens must be adopted;

4. Fully implement the programs initiated by the FAO Panels of Experts on forest gene resources in 1968 and on plant exploration and introduction in 1970;

5. In respect of animal germ plasms, consider the desirability and feasibility of international action to preserve breeds or varieties of animals:

(a) Because such an endeavour would constitute a major effort beyond the scope of any one nation, FAO would be the logical executor of such a project. Close co-operation with Governments would be necessary, however. The International Union for Conservation of Nature and Natural Resources might, logically, be given responsibility for wild species, in co-operation with FAO, the Man and the Biosphere Program (UNESCO), and Governments.

(b) Any such effort should also include research on methods of preserving, storing, and transporting germ plasm;

(c) Specific methods for the maintenance of gene pools of aquatic species should be developed;

(d) The recommendations of the FAO Working Party Meeting on Genetic Selection and Conservation of Genetic Resources of Fish, held in 1971, should be implemented;

6. In respect of micro-organism germ plasms, co-operatively establish and properly fund a few large regional collections:

(a) Full use should be made of major collections now in existence;

(b) In order to provide geographical distribution and access to the developing nations, regional centres should be established in Africa, Asia and Latin America and the existing centres in the developed world should be strengthened;

7. Establish conservation centres of insect germ plasm. The very difficult and long process of selecting or breeding insects conducive to biological control programs can begin only in this manner.

Recommendation 44

It is recommended that Governments, in co-operation with the Secretary-General of the United Nations and the Food and Agriculture Organization of the United Nations where indicated, recognize that evaluation and utilization are critical corollaries to the conservation of genetic resources. In respect of crop-breeding programs, it is recommended that Governments give special emphasis to:

- (a) The quality of varieties and breeds and the potential for increased yields;
- (b) The ecological conditions to which the species are adapted;
- (c) The resistance to diseases, pests and other adverse factors;
- (d) The need for a multiplicity of efforts so as to increase the chances of success.

Recommendation 45

It is recommended that Governments, in co-operation with the Secretary-General of the United Nations and the Food and Agriculture Organization of the United Nations where indicated:

1. Collaborate to establish a global network of national and regional institutes relating to genetic resource conser-

vation based on agreements on the availability of material and information, on methods, on technical standards, and on the need for technical and financial assistance wherever required:

(a) Facilities should be designed to assure the use of the materials and information:

- (i) by breeders, to develop varieties and breeds both giving higher yields and having higher resistance to local pests and diseases and other adverse factors; and
- (ii) by users providing facilities and advice for the safest and most profitable utilization of varieties and breeds most adapted to local conditions;

(b) Such co-operation would apply to all genetic resource conservation centres and to all types mentioned in the foregoing recommendations;

(c) Standardized storage and retrieval facilities for the exchange of information and genetic material should be developed:

- (i) Information should be made generally available and its exchange facilitated through agreement on methods and technical standards;

(ii) International standards and regulations for the shipment of materials should be agreed upon;

(iii) Basic collections and data banks should be replicated in at least two distinct sites, and should remain a national responsibility;

(iv) A standardized and computerized system of documentation is required;

(d) Technical and financial assistance should be provided where required; areas of genetic diversity are most frequently located in those countries most poorly equipped to institute the necessary programs;

2. Recognize that the need for liaison among the parties participating in the global system of genetic resources conservation requires certain institutional innovations. To this end:

(a) *It is recommended* that the appropriate United Nations agency establish an international liaison unit for plant genetic resources in order:

- (i) To improve liaison between governmental and non-governmental efforts;
- (ii) To assist in the liaison and co-operation between national and regional centres, with special emphasis on international agreements on methodology and standards of conservation of genetic material, standardization and co-ordination of computerized record systems, and the exchange of information and material between such centres;
- (iii) To assist in implementing training courses in exploration, conservation and breeding methods and techniques;
- (iv) To act as a central repository for copies of computerized information on gene pools (discs and tapes);
- (v) To provide the secretariat for periodic meetings of international panels and seminars on the subject; a conference on germ plasm conservation might be convened to follow up the successful conference of 1967;
- (vi) To plan and co-ordinate the five-year emergency program on the conservation of endangered species;
- (vii) To assist Governments further, wherever required, in implementing their national programs;
- (viii) To promote the evaluation and utilization of genetic resources at the national and international levels;

(b) *It is recommended* that the appropriate United Nations agency initiate the required program on micro-organism germ plasm:

- (i) Periodic international conferences involving those concerned with the maintenance of and research on gene pools of micro-organisms should be supported;
- (ii) Such a program might interact with the proposed regional culture centres by assuring that each centre places high priority on the training of scientists and technicians from the developing nations; acting as a necessary liaison; and lending financial assistance to those countries established outside the developed countries;
- (iii) The international exchange of pure collections of micro-organisms between the major collections of the world has operated for many years and requires little reinforcement;
- (iv) Study should be conducted particularly on waste disposal and recycling, controlling diseases and pests, and food technology and nutrition;

(c) *It is recommended* that the Food and Agriculture Organization of the United Nations institute a program in respect of animal germ plasm to assess and maintain catalogues of the economic characteristics of domestic animal breeds and types and of wild species and to establish gene pools of potentially useful types;

(d) *It is recommended* that the Man and the Biosphere project on the conservation of natural areas and the genetic material contained therein should be adequately supported.

Recommendation 46

It is recommended that Governments, and the Secretary-General in co-operation

with the Food and Agriculture Organization of the United Nations and other United Nations organizations concerned, as well as development assistance agencies, take steps to support recent guidelines, recommendations and programs of the various international fishing organizations. A large part of the needed international action has been identified with action programs initiated by FAO and its International Committee on Fisheries and approximately 24 other bilateral and multilateral international commissions, councils and committees. In particular these organizations are planning and undertaking:

- (a) Co-operative programs such as that of LEPOR (Long-Term and Expanded Program of Oceanic Research), GIPME (Global Investigation of Pollution in the Marine Environment) and IBP (International Biological Program);
- (b) Exchange of data, supplementing and expanding the services maintained by FAO and bodies within its framework in compiling, disseminating and co-ordinating information on living aquatic resources and their environment and fisheries activities;
- (c) Evaluation and monitoring of world fishery resources, environmental conditions, stock assessment, including statistics on catch and effort, and the economics of fisheries;
- (d) Assistance to Governments in interpreting the implications of such assessments, identifying alternative management measures, and formulating required actions;
- (e) Special programs and recommendations for management of stocks of fish and other aquatic animals proposed by the existing international fishery bodies. Damage to fish stocks has often occurred because regulatory action is taken too slowly. In the past, the need for management action to be

nearly unanimous has reduced action to the minimum acceptable level.

Recommendation 47

It is recommended that Governments, and the Secretary-General of the United Nations in co-operation with the Food and Agriculture Organization of the United Nations and other United Nations organizations concerned, as well as development assistance agencies take steps to ensure close participation of fishery agencies and interests in the preparations for the United Nations Conference on the Law of the Sea. In order to safeguard the marine environment and its resources through the development of effective and workable principles and laws, the information and insight of international and regional fishery bodies, as well as the national fishery agencies are essential.

Recommendation 48

It is recommended that Governments, and the Secretary-General in co-operation with the Food and Agriculture Organization of the United Nations and other United Nations organizations concerned, as well as development assistance agencies, take steps to ensure international co-operation in the research, control and regulation of the side effects of national activities in resource utilization where these affect the aquatic resources of other nations:

- (a) *Estuaries, intertidal marshes, and other near-shore and in-shore environments play a crucial role in the maintenance of several marine fish stocks. Similar problems exist in those freshwater fisheries that occur in shared waters;*

- (b) *Discharge of toxic chemicals, heavy metals, and other wastes may affect even high-seas resources;*
- (c) *Certain exotic species, notably the carp, lamprey and alewife, have invaded*

international waters with deleterious effects as a result of unregulated unilateral action.

Recommendation 49

It is recommended that Governments, and the Secretary-General of the United Nations in co-operation with the Food and Agriculture Organization of the United Nations and other United Nations organizations concerned, as well as development assistance agencies, take steps to develop further and strengthen facilities for collecting, analysing and disseminating data on living aquatic resources and the environment in which they live:

- (a) *Data already exist concerning the total harvest from the oceans and from certain regions in respect of individual fish stocks, their quantity, and the fishing efforts expended on them, and in respect of their population structure, distribution and changes. This coverage needs to be improved and extended;*
- (b) *It is clear that a much greater range of biological parameters must be monitored and analysed in order to provide an adequate basis for evaluating the interaction of stocks and managing the combined resources of many stocks. There is no institutional constraint on this expansion but a substantial increase in funding is needed by FAO and other international organizations concerned to meet this expanding need for data;*
- (c) *Full utilization of present and expanded data facilities is dependent on the co-operation of Governments in developing local and regional data networks, making existing data available to FAO and to the international bodies, and formalizing the links between national and international agencies responsible for monitoring and evaluating fishery resources.*

Recommendation 50

It is recommended that Governments, and the Secretary-General of the United Nations in co-operation with the Food and Agriculture Organization of the United Nations and other United Nations organizations concerned, as well as development assistance agencies, take steps to ensure full co-operation among Governments by strengthening the existing international and regional machinery for development and management of fisheries and their related environmental aspects and, in those regions where these do not exist, to encourage the establishment of fishery councils and commissions as appropriate.

- (a) *The operational efficiency of these bodies will depend largely on the ability of the participating countries to carry out their share of the activities and programs;*
- (b) *Technical support and servicing from the specialized agencies, in particular from FAO, is also required;*
- (c) *The assistance of bilateral and international funding agencies will be needed to ensure the full participation of the developing countries in these activities.*

Recommendation 51

It is recommended that Governments concerned consider the creation of river-basin commissions or other appropriate machinery for co-operation between interested States for water resources common to more than one jurisdiction.

- (a) *In accordance with the Charter of the United Nations and the principles of international law full consideration must be given to the right of permanent sovereignty of each country concerned to develop its own resources;*
- (b) *The following principles should be considered by the States concerned when appropriate:*

- (i) Nations agree that when major water resource activities are contemplated that may have a significant environmental effect on another country, the other country should be notified well in advance of the activity envisaged;
- (ii) The basic objective of all water resource use and development activities from the environmental point of view is to ensure the best use of water and to avoid its pollution in each country;
- (iii) The net benefits of hydrologic regions common to more than one national jurisdiction are to be shared equitably by the nations affected;
- (c) Such arrangements, when deemed appropriate by the States concerned, will permit undertaking on a regional basis:
 - (i) Collection, analysis, and exchanges of hydrologic data through some international mechanism agreed upon by the States concerned;
 - (ii) Joint data-collection programs to serve planning needs;
 - (iii) Assessment of environmental effects of existing water uses;
 - (iv) Joint study of the causes and symptoms of problems related to water resources, taking into account the technical, economic, and social considerations of water quality control;
 - (v) Rational use, including a program of quality control, of the water resource as an environmental asset;
 - (vi) Provision for the judicial and administrative protection of water rights and claims;
 - (vii) Prevention and settlement of disputes with reference to the management and conservation of water resources;
 - (viii) Financial and technical co-operation of a shared resource;

(d) Regional conferences should be organized to promote the above considerations.

Recommendation 52

It is recommended that the Secretary-General take steps to ensure that appropriate United Nations bodies support government action where required:

1. Reference is made to the Food and Agriculture Organization of the United Nations, the World Health Organization, the World Meteorological Organization, the Department of Economic and Social Affairs of the United Nations Secretariat (Resources and Transport Division), the United Nations Educational, Scientific and Cultural Organization/ International Hydrological Decade, the regional economic commissions and the United Nations Economic and Social Office in Beirut. For example:
 - (a) The Food and Agriculture Organization of the United Nations has established a Commission on Land and Water Use for the Middle East which promotes regional co-operation in research, training and information, *inter alia* on water management problems;
 - (b) The World Health Organization has available the International Reference Centre for Waste Disposal located at Dübendorf, Switzerland, and International Reference Centre on Community Water Supply in the Netherlands;
 - (c) The World Meteorological Organization has a Commission on Hydrology which provides guidance on data collection and on the establishment of hydrological networks;
 - (d) The Resources and Transport Division of the Department of Economic and Social Affairs, United Nations Secretariat, has the United Nations Water Resources Development Centre;
 - (e) The United Nations Educational, Scientific and Cultural Organization is

sponsoring the International Hydrological Decade program of co-ordinated research on the quality and quantity of world water resources.

2. Similar specialized centres should be established at the regional level in developing countries for training research and information exchange on:

- (a) Inland water pollution and waste disposal in co-operation with the World Health Organization, the Food and Agriculture Organization of the United Nations, the United Nations regional economic commissions and the United Nations Economic and Social Office in Beirut;
- (b) Water management for rain-fed and irrigated agriculture, by the Food and Agriculture Organization of the United Nations in co-operation with the regional economic commissions and the United Nations Economic and Social Office in Beirut;
- (c) Integrated water resources planning and management in co-operation with the Department of Economic and Social Affairs of the United Nations Secretariat (Resources and Transport Division), the regional economic commissions, and the United Nations Economic and Social Office in Beirut.

Recommendation 53

It is recommended that the Secretary-General take steps to ensure that the United Nations system is prepared to provide technical and financial assistance to Governments when requested in the different functions of water resources management:

- (a) Surveys and inventories;
- (b) Water resources administration and policies, including:
 - (i) The establishment of institutional frameworks;
 - (ii) Economic structures of water

resources management and development;

(iii) Water resources law and legislation;

(c) Planning and management techniques, including:

- (i) The assignment of water quality standards;
- (ii) The implementation of appropriate technology;
- (iii) More efficient use and re-use of limited water supplies;

(d) Basic and applied studies and research;

(e) Transfer of existing knowledge;

(f) Continuing support of the program of the International Hydrological Decade.

Recommendation 54

It is recommended that the Secretary-General take steps to establish a roster of experts who would be available to assist Governments, upon request, to anticipate and evaluate the environmental effects of major water development projects. Governments would have the opportunity of consulting teams of experts drawn from this roster, in the first stages of project planning. Guidelines could be prepared to assist in the review and choices of alternatives.

Recommendation 55

It is recommended that the Secretary-General take steps to conduct an exploratory program to assess the actual and potential environmental effects of water management upon the oceans, define terms and estimate the costs for a comprehensive program of action, and establish and maintain as far as possible:

- (a) A world registry of major or otherwise important rivers arranged regionally and classified according to their discharge of water and pollutants;
- (b) A world registry of clean rivers which would be defined in accordance

with internationally agreed quality criteria and to which nations would contribute on a voluntary basis:

- (i) The oceans are the ultimate recipient for the natural and man-made wastes discharged into the river systems of the continents;
- (ii) Changes in the amount of river-flow into the oceans, as well as in its distribution in space and time, may considerably affect the physical, chemical and biological regime of the estuary regions and influence the oceanic water systems;
- (iii) It would be desirable for nations to declare their intention to have admitted to the world registry of clean rivers those rivers within their jurisdiction that meet the quality criteria as defined and to declare their further intention to ensure that certain other rivers shall meet those quality criteria by some target date.

Recommendation 56

It is recommended that the Secretary-General provide the appropriate vehicle for the exchange of information on mining and mineral processing.

- (a) Improved accessibility and dissemination of existing information is required; the body of literature and experience is already larger than one would think.
- (b) Possibilities include the accumulation of information on:
 - (i) the environmental conditions of mine sites;
 - (ii) the action taken in respect of the environment; and
 - (iii) the positive and negative environmental repercussions.
- (c) Such a body of information could be used for prediction. Criteria for the planning and management of mineral production would emerge and would

indicate where certain kinds of mining should be limited, where reclamation costs would be particularly high, or where other problems would arise.

(d) The appropriate United Nations bodies should make efforts to assist the developing countries by, *inter alia*, providing adequate information for each country on the technology for preventing present or future environmentally adverse effects of mining and the adverse health and safety effects associated with the mineral industry, and by accepting technical trainees and sending experts.

Recommendation 57

It is recommended that the Secretary-General take steps to ensure proper collection, measurement and analysis of data relating to the environmental effects of energy use and production within appropriate monitoring systems.

- (a) The design and operation of such networks should include, in particular, monitoring the environmental levels resulting from emission of carbon dioxide, sulphur dioxide, oxidants, nitrogen oxides (NO_x), heat and particulates, as well as those from releases of oil and radioactivity:
- (b) In each case the objective is to learn more about the relationships between such levels and the effects on weather, human health, plant and animal life, and amenity values.

Recommendation 58

It is recommended that the Secretary-General take steps to give special attention to providing a mechanism for the exchange of information on energy:

- (a) The rationalization and integration of resource management for energy will clearly require a solid understanding of the complexity of the problem and of the multiplicity of alternative solutions;

(b) Access to the large body of existing information should be facilitated:

- (i) Data on the environmental consequences of different energy systems should be provided through an exchange of national experiences, studies, seminars, and other appropriate meetings;
- (ii) A continually updated register of research involving both entire systems and each of its stages should be maintained.

Recommendation 59

It is recommended that the Secretary-General take steps to ensure that a comprehensive study be promptly undertaken with the aim of submitting a first report, at the latest in 1975, on available energy sources, new technology, and consumption trends, in order to assist in providing a basis for the most effective development of the world's energy resources, with due regard to the environmental effects of energy production and use: such a study to be carried out in collaboration with appropriate international bodies such as the International Atomic Energy Agency and the Organization for Economic Co-operation and Development.

Recommendation 60

*It is recommended that the Secretary-General, in co-operation with Governments concerned and the appropriate international agencies, arrange for systematic audits of natural resource development projects in representative ecosystems of international significance to be undertaken jointly with the Governments concerned after, and where feasible before, the implementation of such projects.**

*Projects might include new agricultural settlement of subtropical and tropical zones, irrigation and drainage in arid zones, tropical forestry development, major hydroelectric developments, land reclamation works in tropical lowland coastal areas, and settlement of nomads in semi-

Recommendation 61

It is recommended that the Secretary-General, in co-operation with Governments concerned and the appropriate international agencies, provide that pilot studies be conducted in representative ecosystems of international significance to assess the environmental impact of alternative approaches to the survey, planning and development of resource projects.

Recommendation 62

It is recommended that the Secretary-General, in co-operation with Governments concerned and the appropriate international agencies, provide that studies be conducted to find out the connexion between the distribution of natural resources and people's welfare and the reasons for possible discrepancies.

Recommendation 63

It is recommended that the Secretary-General take steps to ensure that international development assistance agencies, in co-operation with recipient Governments, intensify efforts to revise and broaden the criteria of development project analysis to incorporate environmental impact considerations.

Recommendation 64

*It is recommended that the Secretary-General take steps to ensure that the United Nations agencies concerned undertake studies on the relative costs and benefits of synthetic *versus* natural products serving identical uses.*

arid zones. The cost of audits in developing countries should not be imputed to the costs of the resource development projects but financed from separate international sources.

Recommendation 65

It is recommended that the Man and the Biosphere Program be vigorously pursued by the United Nations Educational, Scientific and Cultural Organization in co-operation with other United Nations organizations and other international scientific organizations.

Recommendation 66

It is recommended that World Meteorological Organization initiate or intensify studies on the interrelationships of resource development and meteorology.

Recommendation 67

It is recommended that the Secretary-General, in co-operation with interested Governments and United Nations specialized agencies, take the necessary steps to encourage the further development of remote-sensing techniques for resources surveys and the utilization of these techniques on the basis of proper international arrangements.

Recommendation 68

It is recommended that the Secretary-General, in co-operation with the appropriate agencies of the United Nations and other international organizations, promote jointly with interested Governments the development of methods for the integrated planning and management of natural resources, and provide, when requested, advice to Governments on such methods, in accordance with the particular environmental circumstances of each country.

Recommendation 69

It is recommended that the Food and Agriculture Organization of the United Nations expand its present program on the stabilization of marginal lands.

Identification and control of pollutants of broad international significance

A. Pollution Generally

Recommendation 70

It is recommended that Governments be mindful of activities in which there is an appreciable risk of effects on climate, and to this end:

- (a) Carefully evaluate the likelihood and magnitude of climatic effects and disseminate their findings to the maximum extent feasible before embarking on such activities;
- (b) Consult fully other interested States when activities carrying a risk of such effects are being contemplated or implemented.

Recommendation 71

It is recommended that Governments use the best practicable means available to minimize the release to the environment of toxic or dangerous substances, especially if they are persistent substances such as heavy metals and organochlorine compounds, until it has been demonstrated that their release will not give rise to unacceptable risks or unless their use is essential to human health or food production, in which case appropriate control measures should be applied.

Recommendation 72

It is recommended that in establishing standards for pollutants of international significance, Governments take into account the relevant standards proposed by competent international organizations, and concert with other concerned Governments and the competent international organizations in planning and carrying out control programs for pollutants distributed

beyond the national jurisdiction from which they are released.

Recommendation 73

It is recommended that Governments actively support, and contribute to, international programs to acquire knowledge for the assessment of pollutant sources, pathways, exposures and risks and that those Governments in a position to do so provide educational, technical and other forms of assistance to facilitate broad participation by countries regardless of their economic or technical advancement.

Recommendation 74

It is recommended that the Secretary-General, drawing on the resources of the entire United Nations system, and with the active support of Governments and appropriate scientific and other international bodies:

- (a) Increase the capability of the United Nations system to provide awareness and advance warning of deleterious effects to human health and well-being from man-made pollutants;

- (b) Provide this information in a form which is useful to policy-makers at the national level;
- (c) Assist those Governments which desire to incorporate these and other environmental factors into national planning processes;
- (d) Improve the international acceptability of procedures for testing pollutants and contaminants by:

- (i) International division of labour in carrying out the large-scale testing programs needed;
- (ii) Development of international schedules of tests for evaluation of the environmental impact potential of specific contaminants or products. Such a schedule of tests should include consideration of both short-term and long-term

effects of all kinds, and should be reviewed and brought up to date from time to time to take into account new knowledge and techniques;

- (iii) Development and implementation of an international intercalibration program for sampling and analytical techniques to permit more meaningful comparisons of national data;
- (iv) Develop plans for an International Registry of Data on Chemicals in the Environment based on a collection of available scientific data on the environmental behaviour of the most important man-made chemicals and containing production figures of the potentially most harmful chemicals, together with their pathways from factory *via* utilization to ultimate disposal or re-circulation.

Recommendation 75

It is recommended that without reducing in any way their attention to non-radioactive pollutants, Governments should:

- (a) Explore with the International Atomic Energy Agency and the World Health Organization the feasibility of developing a registry of releases to the biosphere of significant quantities of radioactive materials;
- (b) Support and expand, under the International Atomic Energy Agency and appropriate international organizations, international co-operation on radioactive waste problems, including problems of mining and tailings and also including co-ordination of plans for the siting of fuel-reprocessing plants in relation to the siting of the ultimate storage areas, considering also the transportation problems.

Recommendation 76*It is recommended:*

- (a) That a major effort be undertaken to develop monitoring and both epidemiological and experimental research programs providing data for early warning and prevention of the deleterious effects of the various environmental agents, acting singly or in combination, to which man is increasingly exposed, directly or indirectly, and for the assessment of their potential risks to human health, with particular regard to the risks of mutagenicity, teratogenicity and carcinogenicity. Such programs should be guided and co-ordinated by the World Health Organization;
- (b) That the World Health Organization co-ordinate the development and implementation of an appropriate international collection and dissemination system to correlate medical, environmental and family-history data;
- (c) That Governments actively support and contribute to international programs for research and development of guidelines concerning environmental factors in the work environment.

Recommendation 77

It is recommended that the World Health Organization, in collaboration with the relevant agencies, in the context of an approved program, and with a view to suggesting necessary action, assist Governments, particularly those of developing countries, in undertaking co-ordinated programs of monitoring of air and water and in establishing monitoring systems in areas where there may be a risk to health from pollution.

Recommendation 78

It is recommended that internationally co-ordinated programs of research and monitoring of food contamination by

chemical and biological agents be established and developed jointly by the Food and Agriculture Organization of the United Nations and the World Health Organization, taking into account national programs, and that the results of monitoring be expeditiously assembled, evaluated and made available so as to provide early information on rising trends of contamination and on levels that may be considered undesirable or may lead to unsafe human intakes.

Recommendation 79*It is recommended:*

- (a) That approximately 10 baseline stations be set up, with the consent of the States involved, in areas remote from all sources of pollution in order to monitor long-term global trends in atmospheric constituents and properties which may cause changes in meteorological properties, including climatic changes;
- (b) That a much larger network of not less than 100 stations be set up, with the consent of the States involved, for monitoring properties and constituents of the atmosphere on a regional basis and especially changes in the distribution and concentration of contaminants;
- (c) That these programs be guided and co-ordinated by the World Meteorological Organization;
- (d) That the World Meteorological Organization, in co-operation with the International Council of Scientific Unions (ICSU), continue to carry out the Global Atmospheric Research Program (GARP), and if necessary establish new programs to understand better the general circulation of the atmosphere and the causes of climatic changes whether these causes are natural or the result of man's activities.

Recommendation 80

It is recommended that the Secretary-General ensure:

- (a) That research activities in terrestrial ecology be encouraged, supported and co-ordinated through the appropriate agencies, so as to provide adequate knowledge of the inputs, movements, residence times and ecological effects of pollutants identified as critical;
- (b) That regional and global networks of existing and, where necessary, new research stations, research centres, and biological reserves be designated or established within the framework of the Man and the Biosphere Program (MAB) in all major ecological regions, to facilitate intensive analysis of the structure and functioning of ecosystems under natural or managed conditions;
- (c) That the feasibility of using stations participating in this program for surveillance of the effects of pollutants on ecosystems be investigated;
- (d) That programs such as the Man and the Biosphere Program be used to the extent possible to monitor:
 - (i) the accumulation of hazardous compounds in biological and abiotic material at representative sites;
 - (ii) the effect of such accumulation on the reproductive success and population size of selected species.

Recommendation 81

It is recommended that the World Health Organization, together with the international organizations concerned, continue to study, and establish, primary standards for the protection of the human organism, especially from pollutants that are common to air, water and food, as a basis for the establishment of derived working limits.

Recommendation 82

It is recommended that increased support be given to the Codex Alimentarius Commission to develop international standards for pollutants in food and a code of ethics for international food trade, and that the capabilities of the Food and Agriculture Organization of the United Nations and the World Health Organization to assist materially and to guide developing countries in the field of food control be increased.

Recommendation 83

It is recommended that the appropriate United Nations agencies develop agreed procedures for setting derived working limits for common air and water contaminants.

Recommendation 84

It is recommended that Governments make available, through the International Referral System established in pursuance of recommendation 101 of this Conference, such information as may be requested on their pollution research and pollution control activities, including legislative and administrative arrangements, research on more efficient pollution control technology, and cost-benefit methodology.

Recommendation 85

It is recommended that any mechanism for co-ordinating and stimulating the actions of the different United Nations organs in connexion with environmental problems include among its functions:

(a) Development of an internationally accepted procedure for the identification of pollutants of international significance and for the definition of the degree and scope of international concern;

- (b) Consideration of the appointment of appropriate intergovernmental, expert bodies to assess quantitatively the exposures, risks, pathways and sources of pollutants of international significance;
- (c) Review and co-ordination of international co-operation for pollution control, ensuring in particular that needed measures shall be taken and that measures taken in regard to various media and sources shall be consistent with one another;
- (d) Examination of the needs for technical assistance to Governments in the study of pollution problems, in particular those involving international distribution of pollutants;
- (e) Encouragement of the establishment of consultation mechanisms for speedy implementation of concerted abatement programs with particular emphasis on regional activities.

B. Marine Pollution**Recommendation 86**

It is recommended that Governments, with the assistance and guidance of appropriate United Nations bodies, in particular the Joint Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP):

- (a) Accept and implement available instruments on the control of the maritime sources of marine pollution;
- (b) Ensure that the provisions of such instruments are complied with by ships flying their flags and by ships operating in areas under their jurisdiction and that adequate provisions are made for reviewing the effectiveness of, and revising, existing and proposed international measures for control of marine pollution;
- (c) Ensure that ocean dumping by their nationals anywhere, or by any person in areas under their jurisdiction, is controlled and that Governments shall continue to work towards the completion of, and bringing into force as soon as possible of, an over-all instrument for the control of ocean dumping as well as needed regional agreements within the framework of this instrument, in particular for enclosed and semi-enclosed seas, which are more at risk from pollution;
- (d) Refer the draft articles and annexes contained in the report of the inter-governmental meetings at Reykjavik, Iceland, in April 1972 and in London in May 1972 to the United Nations Committee on the Peaceful Uses of the Seabed and the Ocean Floor beyond the Limits of National Jurisdiction at its session in July/August 1972 for information and comments and to a conference of Governments to be convened by the Government of the United Kingdom of Great Britain and Northern Ireland in consultation with the Secre-

tary-General of the United Nations before November 1972 for further consideration, with a view to opening the proposed convention for signature at a place to be decided by that Conference, preferably before the end of 1972;

(e) Participate fully in the 1973 Intergovernmental Maritime Consultative Organization (IMCO) Conference on Marine Pollution and the Conference on the Law of the Sea scheduled to begin in 1973, as well as in regional efforts, with a view to bringing all significant sources of pollution within the marine environment, including radioactive pollution from nuclear surface ships and submarines, and in particular in enclosed and semi-enclosed seas, under appropriate controls and particularly to complete elimination of deliberate pollution by oil from ships, with the goal of achieving this by the middle of the present decade;

(f) Strengthen national controls over land-based sources of marine pollution, in particular in enclosed and semi-enclosed seas, and recognize that, in some circumstances, the discharge of residual heat from nuclear and other power-stations may constitute a potential hazard to marine ecosystems.

Recommendation 87

It is recommended that Governments:

(a) Support national research and monitoring efforts that contribute to agreed international programs for research and monitoring in the marine environment, in particular the Global Investigation of Pollution in the Marine Environment (GIPME) and the Integrated Global Ocean Station System (IGOSS);

(b) Provide to the United Nations, the Food and Agriculture Organization of the United Nations and the United Nations Conference on Trade and

Development, as appropriate to the data-gathering activities of each, statistics on the production and use of toxic or dangerous substances that are potential marine pollutants, especially if they are persistent;

(c) Expand their support to components of the United Nations system concerned with research and monitoring in the marine environment and adopt the measures required to improve the constitutional, financial and operational basis under which the Intergovernmental Oceanographic Commission is at present operating so as to make it an effective joint mechanism for the Governments and United Nations organizations concerned (United Nations Educational, Scientific and Cultural Organization, Food and Agriculture Organization of the United Nations, World Meteorological Organization, Inter-Governmental Maritime Consultative Organization, United Nations) and in order that it may be able to take on additional responsibilities for the promotion and co-ordination of scientific programs and services.

Recommendation 88

It is recommended that the Secretary-General, together with the sponsoring agencies, make it possible for the Joint Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP);

(a) To re-examine annually, and revise as required, its "Review of Harmful Chemical Substances", with a view to elaborating further its assessment of sources, pathways and resulting risks of marine pollutants;

(b) To assemble, having regard to other work in progress, scientific data and to provide advice on scientific aspects of marine pollution, especially those of an interdisciplinary nature.

Recommendation 89

It is recommended that the Secretary-General ensure:

(a) That mechanisms for combining world statistics on mining, production, processing, transport and use of potential marine pollutants shall be developed along with methods for identifying high-priority marine pollutants based in part on such data;

(b) That the Joint Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP), in consultation with other expert groups, propose guidelines for test programs to evaluate toxicity of potential marine pollutants;

(c) That the Food and Agriculture Organization of the United Nations, the World Health Organization, the Intergovernmental Oceanographic Commission and the International Atomic Energy Agency encourage studies of the effects of high-priority marine pollutants on man and other organisms, with appropriate emphasis on chronic, low-level exposures;

(d) That the Intergovernmental Oceanographic Commission, with the Food and Agriculture Organization of the United Nations and the World Health Organization, explore the possibility of establishing an international institute for tropical marine studies, which would undertake training as well as research.

Recommendation 90

It is recommended that the Intergovernmental Oceanographic Commission, jointly with the World Meteorological Organization and, as appropriate, in co-operation with other interested intergovernmental bodies, promote the monitoring of marine pollution, preferably within the framework of the Integrated Global Ocean Station System (IGOSS), as well as the development of methods for moni-

toring high-priority marine pollutants in the water, sediments and organisms, with advice from the Joint Group of Experts on the Scientific Aspects of Marine Pollution (GESAMP) on inter-comparability of methodologies.

Recommendation 91

It is recommended that the Intergovernmental Oceanographic Commission:

- (a) Ensure that provision shall be made in international marine research, monitoring and related activities for the exchange, dissemination, and referral to sources of data and information on baselines and on marine pollution and that attention shall be paid to the special needs of developing countries;
- (b) Give full consideration, with the Food and Agriculture Organization of the United Nations, the World Meteorological Organization, the Inter-Governmental Maritime Consultative Organization, the World Health Organization, the International Atomic Energy Agency, the International Hydrographic Organization and the International Council for the Exploration of the Sea and other interested and relevant organizations, to the strengthening of on-going marine and related data and information exchange and dissemination activities;
- (c) Support the concept of development of an interdisciplinary and inter-organizational system primarily involving centres already in existence;
- (d) Initiate an interdisciplinary marine pollution data and scientific information referral capability.

Recommendation 92

It is recommended:

- (a) That Governments collectively endorse the principles set forth in paragraph 197 of Conference document A/CONF. 48/8* as guiding concepts

for the Conference on the Law of the Sea and the Inter-Governmental Maritime Consultative Organization (IMCO) Marine Pollution Conference scheduled to be held in 1973 and also the statement of objectives agreed on at the second session of the Inter-governmental Working Group on Marine Pollution, which reads as follows:

"The marine environment and all the living organisms which it supports are of vital importance to humanity, and all people have an interest in assuring that this environment is so managed that its quality and resources are not impaired. This applies especially to coastal area resources. The capacity of the sea to assimilate wastes and render them harmless and its ability to regenerate natural resources are not unlimited. Proper management is required and measures to prevent and control marine pollution must be regarded as an essential element in this management of the oceans and seas and their natural resources."

and that, in respect of the particular interest of coastal States in the marine environment and recognizing that the resolution of this question is a matter for consideration at the Conference on the Law of the Sea, they take note of the principles on the rights of coastal States discussed but neither endorsed nor rejected at the second session of the Intergovernmental Working Group on Marine Pollution and refer those principles to the 1973 Inter-Governmental Maritime Consultative Organization Conference for information and to the 1973 Conference on the Law of the Sea for such action as may be appropriate;

(b) That Governments take early action to adopt effective national measures for the control of all significant sources of marine pollution, including land-based sources, and concert and co-ordinate their actions regionally and where appropriate on a wider international basis;

(c) That the Secretary-General, in co-operation with appropriate international organizations, endeavour to provide guidelines which Governments might wish to take into account when developing such measures.

Recommendation 93

It is recommended that any mechanism for co-ordinating and stimulating the actions of the different United Nations organs in connexion with environmental problems include among its functions over-all responsibility for ensuring that needed advice on marine pollution problems shall be provided to Governments.

Recommendation 94

It is recommended that the Secretary-General, with the co-operation of United Nations bodies, take steps to secure additional financial support to those training and other programs of assistance that contribute to increasing the capacity of developing countries to participate in international marine research, monitoring and pollution-control programs.

Educational, informational, social and cultural aspects of environmental issues

Recommendation 95

It is recommended that the Secretary-General make arrangements for the United Nations system:

- (a) To provide countries on request with the necessary technical and financial assistance in preparing national reports on the environment, in setting up machinery for monitoring environmental developments from the social and cultural standpoint and, in particular, in drawing up national social, educational and cultural programs;
- (b) To support and encourage projects for continuing co-operation among national social, educational and cultural programs, including their economic aspects, in an international network. The organizations of the United Nations system, including the regional economic commissions and the United Nations Economic Social Office in Beirut, will be called upon to participate in this activity, as will other international governmental and non-governmental agencies;
- (c) To organize the exchange of information on experience, methods and work in progress in connexion with continuous social diagnosis, particularly at the regional level and between regions with common problems;
- (d) To facilitate the development of social and cultural indicators for the environment, in order to establish a common methodology for assessing environmental developments and preparing reports on the subject;
- (e) To prepare, on the basis of the national reports on the state of, and outlook for, the environment, periodic reports on regional or subregional situations and on the international situation in this matter.

The activities described above could be co-ordinated by the new bodies for environmental co-ordination, taking into account the priorities agreed upon according to the resources available. International bodies responsible for technical and financial co-operation and assistance could also help in carrying out these tasks.

Recommendation 96

1. *It is recommended that the Secretary-General, the organizations of the United Nations system, especially the United Nations Educational, Scientific and Cultural Organization, and the other international agencies concerned, should, after consultation and agreement, take the necessary steps to establish an international program in environmental education, interdisciplinary in approach, in school and out of school, encompassing all levels of education and directed towards the general public, in particular the ordinary citizen living in rural and urban areas, youth and adult alike, with a view to educating him as to the simple steps he might take, within his means, to manage and control his environment. A program of technical and financial co-operation and assistance will be needed to support this program, taking into account the priorities agreed upon according to the resources available. This program should include, among other things:*

- (a) The preparation of an inventory of existing systems of education which include environmental education;
- (b) The exchange of information on such systems and, in particular, dissemination of the results of experiments in teaching;
- (c) The training and retraining of professional workers in various disciplines at various levels (including teacher training);

(d) Consideration of the formation of groups of experts in environmental disciplines and activities, including those concerning the economic, sociological, tourist and other sectors, in order to facilitate the exchange of experience between countries which have similar environmental conditions and comparable levels of development;

(e) The development and testing of new materials and methods for all types and levels of environmental education.

2. *It is further recommended that United Nations Educational, Scientific and Cultural Organization, under the Man and the Biosphere Program, the World Health Organization, the Food and Agricultural Organization of the United Nations, the United Nations Industrial Development Organization, the World Meteorological Organization and all the organizations concerned, including the scientific unions co-ordinated by the International Council of Scientific Unions, should develop their activities in studying desirable innovations in the training of specialists and technicians and, in collaboration with the United Nations Development Program, should encourage the institution, at the regional and the international level, of courses and training periods devoted to the environment.*

3. *It is further recommended that international organizations for voluntary service, and, in particular, the International Secretariat for Volunteer Service, should include environmental skills in the services they provide, in consultation with the United Nations Development Program through the United Nations Volunteer Program.*

Recommendation 97

1. *It is recommended that the Secretary-*

General make arrangements:

- (a) To establish an information program designed to create the awareness which individuals should have of environmental issues and to associate the public with environmental management and control. This program will use traditional and contemporary mass media of communication, taking distinctive national conditions into account. In addition, the program must provide means of stimulating active participation by the citizens, and of eliciting interest and contributions from non-governmental organizations for the preservation and development of the environment;
- (b) To institute the observance of a World Environment Day;
- (c) For the preparatory documents and official documents of the Conference to be translated into the widest possible range of languages and circulated as widely as possible;
- (d) To integrate relevant information on the environment in all its various aspects into the activities of the information organs of the United Nations system;
- (e) To develop technical co-operation, particularly through and between the United Nations regional economic commissions and the United Nations Economic and Social Office in Beirut.

2. *It is also recommended* that the Secretary-General and the development agencies make arrangements to use and adapt certain international development programs – provided that this can be done without delaying their execution – so as to improve the dissemination of information and to strengthen community action on environment problems, especially among the oppressed and underprivileged peoples of the earth.

Recommendation 98

It is recommended that Governments, with the assistance of the Secretary-General, the Food and Agricultural Organization of the United Nations, the United Nations Educational, Scientific and Cultural Organization and the other international and regional inter-governmental and non-governmental agencies concerned, should continue the preparation of the present and future conventions required for the conservation of the world's natural resources and cultural heritage. In the course of this preparatory work, Governments should consider the possibility of putting into operation systems of protection for elements of the world heritage, under which those Governments that wish to save elements of their national heritage of universal value would be able to obtain from the international community, on request, the technical and financial assistance required to bring their efforts to fruition.

Recommendation 99

1. *It is recommended* that Governments should:

- (a) Noting that the draft convention prepared by United Nations Educational, Scientific and Cultural Organization concerning the protection of the world natural and cultural heritage marks a significant step towards the protection, on an international scale, of the environment, examine this draft convention with a view to its adoption at the next General Conference of UNESCO;
- (b) Whenever appropriate, sign the Convention on Conservation of Wetlands of International Importance;

2. *It is recommended* that the Secretary-General, in consultation with the competent agencies of the United

Nations system and the non-governmental organizations concerned, make arrangements for a detailed study of all possible procedures for protecting certain islands for science;

3. *It is recommended* that a plenipotentiary conference be convened as soon as possible, under appropriate governmental or intergovernmental auspices, to prepare and adopt a convention on export, import and transit of certain species of wild animals and plants.

Recommendation 100

It is recommended that the Secretary-General make arrangements:

- (a) To be kept informed of national pilot schemes for new forms of environmental management;
- (b) To assist countries, on request, with their research and experiments;
- (c) To organize the international exchange of information collected on this subject.

Recommendation 101

It is recommended that the Secretary-General take the appropriate steps, including the convening of an expert meeting, to organize an International Referral Service for sources of environmental information, taking into account the model described in paragraphs 129 to 136 of the report on educational, informational, social and cultural aspects of environmental issues (A/CONF.48/9), in order to assist in the successful implementation of all the recommendations made in respect of those aspects of environmental issues and of most of the recommendations envisaged in the other substantive subject areas covered in the Conference agenda.

Development and Environment

Recommendation 102

It is recommended that the appropriate regional organizations give full consideration to the following steps:

- (a) Preparing short-term and long-term plans at regional, subregional and sectoral levels for the study and identification of the major environmental problems faced by the countries of the region concerned as well as the special problems of the least developed countries of the region and of countries with coastlines and inland lakes and rivers exposed to the risk of marine and other forms of pollution;
- (b) Evaluating the administrative, technical and legal solutions to various environmental problems in terms of both preventive and remedial measures, taking into account possible alternative and/or multidisciplinary approaches to development;
- (c) Preparation, within the framework of international agreements, of legislative measures designed to protect marine (and fresh-water) fisheries resources within the limits of their national jurisdiction;
- (d) Increasing and facilitating, in the context of development and as proposed in the World Plan of Action for the Application of Science and Technology to Development, the acquisition and distribution of information and experience to member countries through global and regional co-operation, with particular emphasis on an international information referral networks approach and on a regular exchange of information and observation among the regional organizations;
- (e) Establishing facilities for the exchange of information and experience between less industrialized countries which, although situated in different regions, share similar problems as a re-

sult of common physical, climatic and other factors;

- (f) Encouraging the training of personnel in the techniques of incorporating environmental considerations into developmental planning, and of identifying and analysing the economic and social cost-benefit relationships of alternative approaches;
- (g) Establishing criteria, concepts and a terminology of the human environment through interdisciplinary efforts;
- (h) Establishing and disseminating information on the significant environmental problems of each region and the nature and result of steps taken to cope with them;
- (i) Providing and co-ordinating technical assistance activities directed towards establishing systems of environmental research, information and analysis at the national level;
- (j) Assisting developing countries, in co-operation with appropriate international agencies, in promoting elementary education, with emphasis on hygiene, and in developing and applying suitable methods for improving health, housing, sanitation and water supply, and controlling soil erosion. Emphasis should be placed on techniques promoting the use of local labour and utilizing local materials and local expertise in environmental management;
- (k) Encouraging the appropriate agencies and bodies within the United Nations to assist the developing countries, at their request, in establishing national science, technology and research policies to enable the developing countries to acquire the capacity to identify and combat environmental problems in the early planning and development stages. In this respect, special priority should be accorded to the type of research, technology and science which would help developing countries speed up, without adverse environment

effects, the exploration, exploitation, processing and marketing of their natural resources.

Recommendation 103

It is recommended that Governments take the necessary steps to ensure:

- (a) That all countries present at the Conference agree not to invoke environmental concerns as a pretext for discriminatory trade policies or for reduced access to markets and recognize further that the burdens of the environmental policies of the industrialized countries should not be transferred, either directly or indirectly, to the developing countries. As a general rule, no country should solve or disregard its environmental problems at the expense of other countries;
- (b) That where environmental concerns lead to restrictions on trade, or to stricter environmental standards with negative effects on exports, particularly from developing countries, appropriate measures for compensation should be worked out within the framework of existing contractual and institutional arrangements and any new such arrangements that can be worked out in the future;
- (c) That the General Agreement of Tariffs and Trade, among other international organizations, could be used for the examination of the problems, specifically through the recently established Group on Environmental Measures and International Trade and through its general procedures for bilateral and multilateral adjustment of differences;
- (d) That whenever possible (that is, in cases which do not require immediate discontinuation of imports), countries should inform their trading partners in advance about the intended action in order that there might be an opportunity to consult within the GATT Group on Environmental Measures and Interna-

tional Trade, among other international organizations. Assistance in meeting the consequences of stricter environmental standards ought to be given in the form of financial or technical assistance for research with a view to removing the obstacles that the products of developing countries have encountered; (e) That all countries agree that uniform environmental standards should not be expected to be applied universally by all countries with respect to given industrial processes or products except in those cases where environmental disruption may constitute a concern to other countries. In addition, in order to avoid an impairment of the access of the developing countries to the markets of the industrialized countries because of differential product standards, Governments should aim at world-wide harmonization of such standards. Environmental standards should be established, at whatever levels are necessary, to safeguard the environment, and should not be directed towards gaining trade advantages; (f) That the Governments and the competent international organizations keep a close watch on medium- and long-term trends in international trade and take measures with a view to promoting:

- (i) The exchange of environmental protection technologies;
- (ii) International trade in natural products and commodities which compete with synthetic products that have a greater capacity for pollution.

Recommendation 104

It is recommended that the Secretary-General ensure:

- (a) That appropriate steps shall be taken by the existing United Nations organizations to identify the major threats to exports, particularly those of developing countries, that arise from

environmental concerns, their character and severity, and the remedial action that may be envisaged;

(b) That the United Nations system, in co-operation with other governmental and non-governmental agencies working in this field, should assist Governments to develop mutually acceptable common international environmental standards on products which are considered by Governments to be of significance in foreign trade. Testing and certification procedures designed to ensure that the products conform to these standards should be such as to avoid arbitrary and discriminatory actions that might affect the trade of developing countries.

Recommendation 105

It is recommended that the General Agreement of Tariffs and Trade, the United Nations Conference on Trade and Development and other international bodies, as appropriate, should, within their respective fields of competence, consider undertaking to monitor, assess, and regularly report the emergence of tariff and non-tariff barriers to trade as a result of environmental policies.

Recommendation 106

It is recommended:

- (a) That the Secretary-General, in co-operation with other international bodies as appropriate, should examine the extent to which the problems of pollution could be ameliorated by a reduction in the current levels of production and in the future rate of growth of the production of synthetic products and substitutes which, in their natural form, could be produced by developing countries; and make recommendations for national and international action;
- (b) That Governments of the developing countries consider fully the new opportunities that may be offered to them to

establish industries and/or expand existing industries in which they may have comparative advantages because of environmental considerations, and that special care be taken to apply the appropriate international standards on environment in order to avoid the creation of pollution problems in developing countries;

(c) That the Secretary-General, in consultation with appropriate international agencies, undertake a full review of the practical implications of environmental concerns in relation to distribution of future industrial capacity and, in particular, to ways in which the developing countries may be assisted to take advantage of opportunities and to minimize risks in this area.

Recommendation 107

It is recommended that the Secretary-General, in collaboration with appropriate international agencies, ensure that a study be conducted of appropriate mechanisms for financing international environmental action, taking into account General Assembly resolution 2849 (XXVI).

Recommendation 108

It being recognized that it is in the interest of mankind that the technologies for protecting and improving the environment be employed universally, *it is recommended* that the Secretary-General be asked to undertake studies, in consultation with Governments and appropriate international agencies, to find means by which environmental technologies may be made available for adoption by developing countries under terms and conditions that encourage their wide distribution without constituting an unacceptable burden to developing countries.

Recommendation 109

It is recommended that the Secretary-General, in collaboration with appropriate international agencies, take steps to ensure that the environmental considerations of an international nature related to the foregoing recommendations be integrated into the review and appraisal of the International Development Strategy for the Second Development Decade in such a way that the flow of international aid to developing countries is not hampered. Recommendations for national action, proposed by the Secretary-General of the Conference, shall be referred to Governments for their consideration and, when deemed appropriate, should be taken into account in the review and appraisal process during the consideration of matters for national action as included in the International Development Strategy. It should further be ensured that the preoccupation of developed countries with their own environmental problems should not affect the flow of assistance to developing countries, and that this flow should be adequate to meet the additional environmental requirements of such countries.

Appendix 4

General Principles for Assessment and Control of Marine Pollution*

A set of general principles for assessment and control of marine pollution should be accepted and endorsed by Governments.

The definition of marine pollution employed by the United Nations is "the introduction by man, directly or indirectly, of substances or energy into the marine environment (including estuaries) resulting in such deleterious effects as harm to living resources, hazards to human health, hindrance to marine activities including fishing, impairment of quality for use of sea water, and reduction of amenities".

The following principles were suggested by the Intergovernmental Working Group on Marine Pollution (November 1971) as guiding concepts representing a basis for general agreement.

- I. Every State has a duty to protect and preserve the marine environment and, in particular, to prevent pollution that may affect areas where an internationally shared resource is located.
- II. Every State should adopt appropriate measures for the prevention of marine pollution, whether acting individually or in conjunction with other States under agreed international arrangements.
- III. States should use the best practicable means available to them to minimize the discharge of potentially hazardous substances to the sea by all routes, including land-based sources such as rivers, outfalls and pipelines within national jurisdiction, as well as dumping by or from ships, aircraft and platforms.
- IV. States should ensure that their national legislation provides adequate sanctions against those who infringe existing regulations on marine pollution.
- V. States should assume joint responsibility for the preservation of the marine environment beyond the limits of national jurisdiction.
- VI. The States at higher levels of technological and scientific development should assist those nations which request it, for example by undertaking programs, either directly or through competent agencies, intended to provide adequate training of the technical and scientific personnel of those countries, as well as by providing the equipment and facilities needed in areas such as research, administration, monitoring or surveillance, information, waste disposal, and others, which would improve their ability to discharge their duties consisting of protecting the marine environment.
- VII. States should discharge, in accordance with the principles of international law, their obligations towards other States where damage arises from pollution caused by their own activities or by organizations or individuals under their jurisdiction and should co-operate in developing procedures for dealing with such damage and the settlement of disputes.
- VIII. Every State should co-operate with other States and competent international organizations with regard to the elaboration and implementation of internationally agreed rules, standards and procedures for the prevention of marine pollution on global, regional and national levels.
- IX. States should join together regionally to concert their policies and adopt measures in common to prevent the pollution of the areas which, for geographical or ecological reasons, form a natural entity and an integrated whole.
- X. International guidelines and criteria should be developed, both by national Governments and through intergovernmental agencies, to provide the policy framework for control measures. A comprehensive plan for the protection of the marine environment should provide for the identification of critical pollutants and their pathways and sources, determination of exposures to these pollutants and assessment of the risks they pose, timely detection of undesirable trends, and development of detection and monitoring systems.
- XI. Internationally agreed criteria and standards should provide for regional and local variations in the effects of pollution and in the evaluation of these effects. Such variables should also include the ecology of sea areas, econo-

mic and social conditions, and amenities, recreational facilities and other uses of the seas.

XII. Primary protection standards and derived working levels—especially codes of practice and effluent standards—may usefully be established at national levels, and in some instances, on a regional or global basis.

XIII. Action to prevent and control marine pollution (particularly direct prohibitions and specific release limits) must guard against the effect of simply transferring damage or hazard from one part of the environment to another.

XIV. The development and implementation of control should be sufficiently flexible to reflect increasing knowledge of the marine ecosystem, pollution effects, and improvements in technological means for pollution control and to take into account the fact that a number of new and hitherto unsuspected pollutants are bound to be brought to light.

XV. Every State should co-operate with other States and with competent international organizations with a view to the development of marine environmental research and survey programs and systems and means for monitoring changes, in the marine environment, including studies of the present state of the oceans, the trends of pollution effects and the exchange of data and scientific information on the marine environment. There should be similar co-operation in the exchange of technological information on means of preventing marine pollution including pollution that may arise from offshore resource exploration and exploitation.

XVI. International guidelines should also be developed to facilitate comparability in methods of detection and measurement of pollutants and their effects.

XVII. In addition to its responsibility for environmental protection within the limits of its territorial sea, a coastal State also has responsibility to protect adjacent areas of the environment from damage that may result from activities within its territory.

XVIII. Coastal States should ensure that adequate and appropriate resources are available to deal with pollution incidents resulting from the exploration and exploitation of seabed resources in areas within the limits of their national jurisdiction.

XIX. States should co-operate in the appropriate international forum to ensure that activities related to the exploration and exploitation of the seabed and the ocean floor beyond the limits of national jurisdiction shall not result in pollution of the marine environment.

XX. All States should ensure that vessels under their registration comply with internationally agreed rules and standards relating to ship design and construction, operating procedures and other relevant factors. States should co-operate in the development of such rules, standards and procedures, in the appropriate international bodies.

XXI. Following an accident on the high seas which may be expected to result in major deleterious consequences from pollution or threat of pollution of the sea, a coastal State facing grave and imminent danger to its coastline and related interests may take appropriate measures as may be necessary to

prevent, mitigate, or eliminate such danger, in accordance with internationally agreed rules and standards.

XXII. Where there is a need for action by or through international agencies for the prevention, control or study of marine pollution, existing bodies, both within and outside the United Nations system, should be utilized as far as possible.

XXIII. States should assist one another, to the best of their ability, in action against marine pollution of whatever origin.

Appendix 5

Submissions to the Canadian National Preparatory Committee of the United Nations Conference on the Human Environment

The information given in this appendix is provided in the official language in which it was presented to the Committee

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Untitled

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Regional Consultations for United Nations Conference on the Human Environment

Biological Council of Canada,
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Untitled

British Columbia Hydro and Power Authority,
970 Burrard Street,
Vancouver.
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British Columbia Teacher's Federation,
105-2235 Burrard Street,
Vancouver.
Summary and Preamble to the Brief Presented to the Regional Consultation for the United Nations Conference on the Human Environment

British Columbia Environmental Council,
Dr. Colin W. Clark,
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The Effects of Global Pollution on Climate

Bubar, S. L., Mrs.,
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Untitled

Canadian Coalition to Stop the Amchitka Nuclear Blast,
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1972 U.N. Conference on Human Environment

Canadian Scientific Pollution and Environmental Control Society,
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44 West 6th Avenue,
Vancouver.
Industrial Fluoride Pollution

Council of Forest Industries of B.C.,
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1055 West Hastings St.,
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Culhane, Gerard F.,
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Statement regarding the Canadian Contribution to the United Nations Conference on the Human Environment

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Preparatory Committee Regional
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the Human Environment*

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Untitled

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The Hazards of Nuclear Energy

Doucet, M. and MacAdam, T.,
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Port Moody.
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Additives*

Erickson, Arthur,
Erickson and Massey, Architects,
2412 Laurel Street,
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Fisheries Association of B.C.,
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*Comments for the Canadian Prepara-
tory Com.—United Nations Con-
ference on the Human Environment*

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*Economic Growth and its Con-
sequences*

Franson, Mary Ann,
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*Submission to the Canadian
Committee for the Stockholm
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Gillespie, V. C., Mrs.,
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R. R. 1, Port Washington.
Nuclear Power

Greenpeace Foundation,
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Sweden*

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ment of Environmental Awareness
and Predictions for the Future*

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Nuclear Testing

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The Consumer in a World Context

McTaggart-Cowan, Ian,
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Richmond.
Smoking is Pollution

Morse, Biran K.,
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147 Riverside Drive,
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O'Riordan, T.,
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*Brief submitted to the Canadian
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South Pender Island.
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Society for Pollution and Environmental
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Mr. Julian Fry, Secretary,
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Society for Pollution and
Environmental Control,
Nanaimo.
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S.P.E.C. Action Group,
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*Brief to the Canadian Preparatory
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*Submission by the Burrard Branch of
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c/o Derrick Mallard,
Executive Director,
Vancouver.
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Tattersfield, Philip W.,
B.C. Society of Landscape Architects,
1008 Homer Street,
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Mrs. Valerie MacDermot,
Correspondence Secretary,
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Warren, Dr. Harry V., Professor,
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Whited, Randall,
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c/o Mr. Jan. O. Murie,
Department of Zoology,
University of Alberta,
Edmonton.
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Alberta Fish and Game Assn.,
c/o Mr. Henry Lembicz, Chairman,
Pollution Control Committee,
Edmonton.

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Alberta Gas Trunk Line Co. Ltd.,
Mr. G. W. Walker, P.Eng.,
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P.O. Box 2535,
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Alberta Institute of Agrologists,
Edmonton.

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Bow Valley Naturalists Club,
c/o Mr. G. Burles and Mr. M. McIvor,
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Calgary Inter-Faith Community
Action Committee,
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faith Community Action Committee to
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*Submission of the Canadian Petroleum
Assoc. to the C.P.C. for the United
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Canadian Society of Wildlife and
Fishery Biologists,
c/o Mr. J. S. Nelson, President,
University of Alberta,
Department of Zoology,
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Cicero Club,
University of Alberta Faculty
Women's Organization,
c/o Mrs. Julia M. Boberg,
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Eastcoast Petroleum Operators Assn.,
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*Summary of Statement to Canadian
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Edmonton and District Council
of Churches,
c/o Mr. Edward M. Checkland,
Edmonton.
*Brief Presented to the Canadian
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Edmonton Area Council,
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c/o Mrs. C. H. Campbell,
10908—65A Avenue,
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Cultural Aspects of Environmental
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Assn.,
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304-10508-69th Avenue,
Edmonton.
*Submission to the Canadian Prepara-
tory Committee for the U.N. Con-
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Edmonton Natural History Club,
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Faculty of Environmental Design,
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Fuller, W. A., Chairman,
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9740—104th Street,
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Environmental Quality,
The University of Alberta,
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to the Regional Consultation for the
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Environment*

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*Summary of Brief Regarding the
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the Growth and the Urban Environment*

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*Canadian Preparatory Committee for
the United Nations Conference on the
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*Brief prepared by S.T.O.P. (Save
Tomorrow—Oppose Pollution) for
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Preparatory Committee*

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UNIFARM,
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Board, Canadian Preparatory
Committee—United Nations
Conference on the Environment*

University Women's Club of
Edmonton, Canadian Federation
of University Women,
c/o Mrs. Barbara Blackley and
Mrs. Marjorie White Buckley,
9230—116th Street,
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*Quick Action to Improve the Human
Environment*

University Women's Club of Edmonton,
 Canadian Federation of University
 Women,
 Mrs. C. McElroy, Secretary,
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*Quick Action to Improve the Human
 Environment*

Voice of Women,
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 Preparatory Committee, United Nations
 Conference on the Human Environment*

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*A Brief to the Canadian Government
 on the United Nations Action Plan*

Wilson, D. W. R.,
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Education for Survival

World Federalists of Canada,
 c/o Mr. C. R. Neill,
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Untitled

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*Submission to the Public Consultation
 for the United Nations Conference on
 the Human Environment*

Ledingham, G. F.,
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*United Nations Conference on the
 Human Environment*

Llewellyn, E. J. and Evans, W. F. J.,
 Institute of Space and
 Atmospheric Studies,
 University of Saskatchewan,
 Saskatoon.
*The possible role of necessary research
 in environmental problems is discussed
 and it is suggested that research teams
 of graduates from established
 disciplines be formed within Universities
 to undertake this Program*

McCoy, W. B.,
 Engineering Department,
 University of Saskatchewan,
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National Socialist Canadian
 Worker's Party,
 P.O. Box 663,
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Protection of the Human Environment

Regina Natural History Society,
 Mr. J. K. Roberts, President,
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*Education and the Public Conscience
 in Environmental Quality Concerns*

Regina Natural History Society,
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*Education and the Public's Conscience
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*A Research into the Evolution of
 Contemporary Economics*

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Untitled

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How the Student-Scientist Team concept can involve youth in Environmental and Socio-Economic Research Projects

Biomass Energy Institute Inc.,
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Energy Production in the U.S. Today and in the Future

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Statement for the U.N. Conference on the Human Environment

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Brief to the Canadian Preparatory Committee of the United Nations Conference on the Human Environment

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 c/o Mr. H. R. Hatheway,
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